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ABSTRACT

To explore media theories of perceived reality regarding factuality, social, and physical realism, and "videocy" (or theatrical spectacle), 32 children in first, third, and fifth grades were individually interviewed after attending a production of "Dinosaurus" which included computer-animated dinosaurs. Contrary to beliefs that special effects may divert attentions outside fictive content, young spectators' minds were not dominated by "videocy" as they merged the emotional expressions of live dinosaur actors with computerized dinosaur images. Watching the mimicry between this doubled set of dinosaur characters enabled them to differentiate dinosaur types by focusing on the screen as well as the actors' dialogue. However, interpretations of the play's resolution varied depending on visual and verbal memories of the protagonist's decisive action, which occurred offstage. Whether "real life" occurs with living actors or as a computerized event makes little difference to young spectators conditioned by the physical realism of electronic media. The interview schedule is appended. (Contains 21 references.) (Author/MES)

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Children's Interpretations of Computer-Animated Dinosaurs in Live Theatre: *Dinosaurus*

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Technical Report
June, 2002

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Abstract

To explore media theories of perceived reality regarding factuality, social and physical realism, and "videocy" (or theatrical spectacle), thirty-two children in first, third, and fifth grades were individually interviewed after attending a production of *Dinosaurus* which included computer-animated dinosaurs. Contrary to beliefs that special effects may divert attentions outside fictive content, young spectators' minds were not dominated by "videocy" as they merged the emotional expressions of live dinosaur actors with computerized dinosaur images. Watching the mimicry between this doubled set of dinosaur characters enabled them to differentiate dinosaur types by focusing on the screen as well as the actors' dialogue. However, interpretations of the play's resolution varied depending on visual and verbal memories of the protagonist's decisive action which occurred offstage. Whether "real life" occurs with living actors or as a computerized event makes little difference to young spectators conditioned by the physical realism of electronic media.

This study is dedicated to the late Dr. John C. Wright

who advised me on his theory of videocy.

"Any study is worth doing."

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Finally, I wish to thank the entire University Theatre production team of *Dinosaurus*: Patrick Carriere, director, who kindly granted me a pre-production interview; Mark Reaney, scenographer and virtual reality technologist; the cast, Brad Danler (Bunk), Theresa Buchheister (Peek), and the dinosaur chorus, Dave Martin, Michelle Nikoomanesh, Becky Lake, and Laurel Woodhouse; stage manager/assistant director, Leslie Fischer; backstage computer and running crews, as well as the entire UT technical staff.

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Literature Review

Much has been made of theatre's uniquely live quality to distinguish this art form from television, film, and computerized entertainment. Yet today's children are exposed to more pre-recorded screen images than spontaneously live theatre than ever before. In fact, family homes have become veritable, self-contained entertainment centers as more and more children over the age of eight have individual access to televisions, VCRs, computers, and video game equipment in the privacy of their own bedrooms (Rideout 1999).

Should live theatre incorporate cinematic imagery into its aesthetic characteristics? Some artists argue vehemently against contaminating the singular purity of living actors on stage before a live audience. Others, such as Mark Reaney, a scenographer at the University of Kansas, counter that "Theatre doesn't have to be anti-video or anti-cinematic but can embrace those elements just as it has embraced all new technologies throughout its history. In doing so, we can adapt them to our own goals of creating exciting live performances for modern audiences." Similarly, the National Theatre Standards place a new focus on "appropriate" technologies by admitting that "The theatre, once limited to the bare stage, has found important resources for creating dramatic productions in such technologies as radio, film, television, and other electronic media" (1994, 15). Given these technological advancements, how do child audiences perceive and respond to the incorporation of cinematic imagery in live performance? A "virtual reality" production of *Dinosaurus* by the University of Kansas Theatre for Young People provided the opportunity to explore this question as a descriptive case study in point.

A Model of Perceived Reality

Many media studies have explored the criteria children use to discern perceptual differences among images of fantasy and reality during middle childhood (e.g., Valkenburg and van der Voort, 1994; Prawat, Anderson, and Hapkeiwicz 1989; Landry, Kelly, and Gardner 1982). Huston and Wright (1998, 1021-1024; Fitch, Huston, and Wright 1993) have synthesized these findings by proposing a structural model of perceived reality for television to characterize its multidimensional nature.

One dimension, *factuality*, is defined by whether the viewer believes that a depicted event actually happened in the unstaged, unscripted, unrehearsed world outside of the medium. Factuality is a function of cognitive schemata which people construct to organize their conceptualizations about people, places, and events in regard to program content. To measure this dimension, children are asked such questions as:

> un/staged: "Did the portrayed events actually happen in real life or just on TV in pretend (or make-believe) life?" "Was it real or pretend (i.e., fact or fiction)?"
>
> un/scripted: "Did the TV show those events *when* they actually happened or did people act out (or repeat) those events *after* it actually happened?"
>
> un/rehearsed: "Did the people practice what they said and did before going on TV?"

By age 6, young audiences know that theatre is a staged, scripted, and rehearsed media event and that actors *represent* fictional characters in fictionalized situations which are *possible*, given these imagined conditions.

The second dimension, *social realism*, refers to the degree of *believability*, *plausibility*, and *perceived similarities* between the viewer and depicted *characters* and *situations*. Here, judgments become highly personal, subjective, and variable as a function of: a) the specific *content* within a target program; b) the individual's unique identity and life experiences; that is, whether the viewer *identifies* with specific characters and/or has experienced similar or analogous situations; and, c) the individual's *motives for watching*; that is, whether the viewer finds visual and verbal information useful or applicable to her life. Interpretations of social realism also depend on the amount of mental effort the viewer is willing to exert in order to recognize and apply similar analogies to his life. To approach this dimension, children are asked:

> im/plausibility: "Were these people believable?" "Did the people look, talk, or do things like people you know in real life?" "Could this situation happen in real life?" "If this situation could happen in real life, would it happen the same way or differently?"
>
> un/similarity: "Did the people look, talk, or do things like you?" "Has this situation ever happened to you in real life?" "Could this situation happen to you?"
>
> motives: "Did you watch this show for fun or to learn something?" "Did you learn anything new from this show?"

Similar to social realism, I separate and add the dimension of *physical realism* as personal judgments which refer to physical representations within fictive contexts. While children rely upon content cues to judge social realism and formal cues to discern factual from fictional events, they also use a medium's formal cues to judge the degree of physical realism against the actual, physical world. Like preschoolers learning to differentiate between actual, physical objects and their representational appearances, 6- and 7-year-olds continue to focus upon the salient, external appearances of people and scenic elements on stage and screen when interpreting degrees of realism in fictional events. Throughout middle childhood, photographic realism or the physical accuracy and authenticity of depicted representations becomes the guiding criteria for judging the degree to which visual images appear "fake," "realistic," or "true to life." With increasing media experience and knowledge of how media forms can manipulate actual realities, children also use their judgments of physical realism to identify and categorize fictional programs by their dramatic genres and theatrical styles. Thus, cartoons and graphic animations may be judged as fictionally "pretend" and, therefore, "fake" or "unrealistic" physical representations of people and animals, while the plausible believability of situation comedies or action-adventure dramas may be interpreted as both "physically realistic" yet "socially unrealistic" events.

When asked to distinguish the formal differences between theatre and television, first and second graders point out the live nature of theatre which makes this medium appear "more real" than camera-recorded television (Saldaña 1989). They also prefer the "bigger screen" of a proscenium stage which allows them to "see everything up close," especially if seated in the front rows (Klein and Fitch 1990). However, 6- to 8-year-olds tend to blur theatre-defined distinctions between "actors" and "characters" (Saldaña 1989). For example, while a character may dramatize plausible actions, the actress's performance of those actions may be judged as less authentic or believable.

John C. Wright also adds a tentative third dimension which he calls *videocy* or *videotypy* to further separate a medium's formal features from its programmatic content. This dimension, which overlaps with physical realism, deals with a production's form or style and the degree to which its technical features dominate or control a viewer's consciousness by calling attention to its special effects. Film and television programs high in videocy (e.g., animated computer graphics) continually remind viewers that they are watching "unreal" technical manipulations of respective media events. Some viewers willingly suspend their disbelief of these unrealities and keep their imaginations inside the fictive world, while others may distance themselves outside the fictive world to marvel at special technical effects.

Young audiences are frequently awed by "videocy," or, rather, theatrical *spectacles* on large proscenium stages. Technical changes in scenery, lighting, and special effects, such as fog or smoke, flashing or chasing lights, falling balloons, confetti, or snow, often trigger vocalizations of surprise, delight, and rapture. Children's thoughts often shift from inside fictive worlds to the actual technical machinations happening live before their very eyes. For example, during the finale of *Crying to Laugh*, many children turned their attentions to a revolving mirror ball throwing soft purple "balloons" of light around the auditorium which diverted their minds from recognizing the metaphoric significance of the protagonist's emotional catharsis (Klein 1995). While artists may intend such spectacles to reflect a character's mental state, these special effects actually divert attention to the technical tricks themselves as children focus their attentions on trying to figure out how such "magical" feats are achieved.

But why should it matter that viewer's attentions take them outside fictive worlds and into the technological tricks and wonders of theatricality, especially when employing computerized media? Because empathy, the ability to feel *with*, and not just *for*, characters inside fictive situations, remains the hallmark of aesthetic experiences. When attentions are diverted from ficitve stories to technological feats, viewers' consciousnesses are literally entertained by videocy. If theatre becomes proscribed more for entertainment than for aesthetic purposes, then it risks losing its educational or utilitarian values in the eyes of lay public members, in comparison to other electronic forms of mass media which can induce far greater "highs" of emotional ecstasy.

While engrossed in the emotional pleasures that spectacular effects trigger, viewers need to consider simultaneously the creator's artistic intentions and evaluate how well these intentions are expressed aesthetically. At young ages, children assume that artists' motives are to achieve photographic realism (i.e., accurate representations) and beauty (e.g., through bright colors in scenery and costumes, shifting lights, or large sizes of objects). While true in part, they have yet to consider artistic motives in direct relation to the expressive characteristics of specific content. Around age 8 or 9, when children recognize the need to make implicit inferences from explicitly concrete cues, they begin to infer an artist's motives for making aesthetic choices beyond these general criteria in connection with specific content. For example, in a play about surrealist René Magritte, fourth and sixth graders began to recognize that projected slides of his artwork were intended, not merely to show his paintings, but to visualize selected images occuring in his imagination during his particular actions in the play (Klein 1993). Thus, by age 12, children recognize how the expressive characteristics of visual representations are directly connected with the artist's state of mind in order to create mutually effective emotional responses (Parsons 1987).

Individual differences in perceived factuality, social and physical realism, and videocy or theatrical spectacle are a function of cognitive development, as marked by age, and acquired schemata of various media through viewing experiences. With increasing exposure to theatre, television, film, and computerized technologies, children gain opportunities for learning the meanings of form and content cues to form respective schemata about audio-visual representations and their conventions. Therefore, familiarity with specific formal conventions and content representations also determines personal judgments about perceived realities. For example, heavy users of mass media may judge the physical realism and spectacle of theatre with greater scrutiny than light users or those less familiar with visually recorded media.

To summarize, cognitive developmental shifts in perceptual judgments occur during middle childhood as audiences use form and content cues to discern factuality and to compare a medium's degrees of realism against physical, psychological, and social realities. Six- and seven-year-olds rely upon actual, observable cues inside a production's formal elements to judge factuality, physical realism, and spectacle based on their criteria of beauty and photographic realism. Eight- and nine-year-olds begin to include more content cues by integrating their knowledge of the social world outside a production to judge the possibilities of social realism within fictional plays. Between ages 10 and 12, children with more mass media experiences balance form and content cues by including more specific inferences about artistic motives to judge how effectively formal production elements express and connect with play content. Given that media studies have yet to explore the dimension of videocy, the purpose of the present study was to test these developmental predictions by focusing on the videocy or "virtual" spectacle of a theatre production.

Dinosaurus: A "Virtual Reality" Theatre Production

Dinosaurus is a scripted play written by Edward Mast and Lenore Bensinger for young theatre audiences (1994). The story involves two human characters, Peek, a scientist, and Bunk, an oil worker, who discover a community of so-called "extinct" dinosaurs while exploring for oil in an underground cave. The original production was conceived as a rear-light-projected, shadow performance enacted entirely behind a large screen of opaque white Visqueen. The two human characters stood apart from three dinosaur dancers, wearing various attachments to capture the silhouette of each type of dinosaur, so that humans would appear very small in relation to each giant dinosaur. One Narrator, standing in front of the screen, translated the dinosaur-dancers' gibberish sounds into English. At the end of the play, audiences discovered that this Narrator was Bunk himself explaining his earlier experiences.

In the production for the present study, the dinosaur characters were graphically designed as computerized animations projected onto a large, dark navy, plastic screen framed behind three-dimensional scenery to represent the cave environment, all of which was illuminated under black lights. A series of raked platforms marked the cave entrance stage right. Two- and three-dimensional stalactites hung from the top of the screen frame, and three-dimensional, cone-shaped stalagmites stood on either side of the floor with additional black lights inside. Stage action also occurred on the orchestra pit which was lowered about six inches. [See Reaney's KU website for photographs of this production at *http://www.ukans.edu/~mreaney/dinosaurus*.]

During performances, two backstage crew members manipulated joysticks on two computers to control each dinosaur's movements. Simultaneously, a group of four actors, known as the "dinosaur chorus," voiced each dinosaur's dialogue while interacting on a low, narrow platform in front of the screen. The director claimed that this theatrical convention, which essentially *doubled* each of the live and virtual dinosaur characters, would foreground the differences between the virtual reality of dinosaurs and the live human reality of the chorus actors. According to him, "The screen only shows images we can't understand until the chorus-actors communicate on a human level. The exciting thing is how we can humanize virtual reality when live actors communicate on stage." He believed that, because children are used to seeing dinosaur images on movie, television, and computer screens, they would figure out the "huge difference" between the live and virtual dinosaurs and perhaps "meld" these images in their minds. He assumed that audiences "being in the same space with living bodies telling the story to them" would make this theatre experience "more interesting" and differentiate it from watching a film.

Another change to the playwrights' intentions was the director's choice to divide the Narrator's lines among each of the dinosaur-chorus actors. This convention doubled the chorus' role purposes as both dinosaurs speaking from their subjective, first-person perspectives and as narrators speaking from objective, and more "lecture-like," third-person perspectives. Furthermore, each chorus member played more than one dinosaur character--Chorus #1: Hark, Spike, Zoozoo; Chorus #2: Point, Meatmouth; Chorus #3: KingKing, Tall, and Baby; and, Chorus #4: Turtle and Big. The chorus also took on additional, representational roles as sculptural objects. At the beginning and end of the play, three chorus members formed their bodies into the profile silhouette of one dinosaur---one stood with her waist bent forward to suggest the neck; another did a complete back-bend to suggest the body, and the third lay on the ground with her leg suggesting a tail. When not playing dinosaurs on the platform, some chorus members remained on stage wrapped around a stalagmite or rolled up into a ball on the floor. They also transformed their bodies into mushrooms and a dinosaur egg which hatched. Thus, chorus members represented four distinct conventions: 1) doubled dinosaur characters; 2) narrators; 3) dinosaur silhouette; and, 4) scenic objects. Based on past teachers' evaluations of productions which indicate that children are confused by character doubling, I hypothesized that these four sets of chorus conventions would further complicate children's ability to determine the chorus' multi-purposes. Furthermore, I expected these conventions to distance children's minds from taking on the dinosaurs' personal and social perspectives from inside the fictive world.

Given these changes in narration, the play's story was no longer told from Bunk's perspective--his subjective explanation about why he chose to blow up the cave entrance to save the dinosaurs' lives from Peek's exploitation of them in the name of a scientific discovery. Therefore, the surprise ending of the play---that is, the audience's discovery that the Narrator is actually Bunk telling us about his past experiences---was completely ignored and lost as chorus members narrated Bunk's off-stage actions and ended the play as follows:

> [After destroying the film in Peek's camera, Bunk says, "G'bye" to the dinosaurs and exits stage right through the cave entrance.]
>
> Chorus-Narrator #: Crawled out the same hole came in by. Set a little dynamite charge off--(*A rumble and crash.*)
>
> Chorus-Narrator #:--blew off a little avalanche. Not much; just enough to cover the entrance to the land of the dinosaurs. He never saw the place again.
>
> [*Long silence*. Three dinosaurs appear checking to see that the "nonecks" (humans) have gone....]
>
> Chorus-Narrator #: There's a place down below
> where the dinosaurs dance
> and dance
> and dance
> at least till the nonecks find them again.
>
> Bunk (appearing from stage left, opposite the cave entrance):
> But there's only one man alive
> who knows his way down.
> 'Cause my little partner, she never found her way back.

And as for me, well,

I'm not telling. (30-31)

Based on this changed ending, I hypothesized that empathetic responses to Bunk's motives and final decision would be significantly diminished. Instead, audiences would remain distanced emotionally by Bunk's surprising break of the fourth wall for the first time at the end of the play while narrating only three sentences. They might also wonder how and why he appeared stage left inside the cave after just seeing him exit the cave, supposedly once and for all, stage right.

Another complicating factor is the dynamite explosion that audiences hear but don't see occurring offstage. Children must infer auditorally that Bunk sets off a dynamite charge from the chorus-narration and sound effects. Past studies have found that children tend to miss major plot actions that occur offstage from verbal-aural cues alone (Klein 1988, 1990). Therefore, I hypothesized that children might not grasp what Bunk actually did offstage and why he did it, thus missing the significance of the play's resolution and its overall environmental theme.

Further Hypotheses and Purposes

The particular content of this play, the technological forms of this production, and the director's conventional choices complicate dimensions of the perceived reality model. While children were expected to perceive the play as a fictional event, they also know that dinosaurs are factual yet extinct creatures which existed in prehistoric times. The impossibility of anyone discovering extinct dinosaurs today renders the play an implausible fiction, yet children were expected to suspend their belief in this fictive world by accepting the play's premise---"What would happen IF people discovered dinosaurs?"---and to judge the social plausibility of characters' actions in this situation based, in part, on the believable performances of individual actors. The multiple roles played by the dinosaur-chorus were also expected to challenge personal judgments of character, narrator, and actor believability.

Judgments of physical realism were expected to differ based on individual schemata of dinosaurs acquired from the school district's Kindergarten science curriculum as well as viewers' familiarity with dinosaurs depicted in accessible film, television, and video or computer games. In fact, the director and scenographer assumed that children would take computerized screen images of dinosaurs for granted and even expect these forms of representation in this production. Therefore, heavy (and presumably older) users of cinematic media were expected to compare the physical representations of these "virtual" dinosaurs against graphic images in mass media to judge degrees of visual accuracy and photographic realism more than light (and presumably younger) users. The timing of Disney's release of *Dinosaur* on video, ten days before study children would attend the production, also became an important contextual factor.

In regard to judgments of actual versus "virtual" realities, all children were expected to distinguish live actors as "more real" than "virtual" dinosaurs depicted on the screen on the basis of biological attributes (Prawat, Anderson, and Hapkeiwicz 1989). The director assumed that the live dinosaur-chorus actors would "humanize" the dinosaurs' computerized images and that children would recognize and value their living presences as different from cinematic recordings. However, I expected that children would be confused by this unfamiliar convention of essentially doubling the dinosaur characters by questioning the need for live actors in front of dinosaur "cartoons," rather than understanding the artists' motives for this choice. (For example, in a production of *The Reluctant Dragon*, primary grade audiences were confused by the depiction of a dragon with "two heads." They could not understand why a visible actor on stilts voiced the dragon above a large, constructed dragon head whose mouth was manipulated by another actor standing inside it.) Whether children would watch the screen dinosaurs or the chorus-actors or both simultaneously was another question in this study. Would the brightly colored, camoflauge-designed costumes of the dino-chorus blend into the screen images or call attention to living actors below? Or would the sheer gigantic size of dinosaur images overpower children's consciousnesses and divert their attentions away from watching the live dino-actors below? While the director intended audiences to link the dinosaur-actors and images together in their imaginations and to fuse the chorus' "humanity" into the screen images, I expected that children would keep these physical entities separated and that their minds would be focused on continually questioning the reasons for depicting two sets of dinosaurs--and four different narrators.

This play also asks viewers to consider the thoughts and feelings of both the human and dinosaur characters from their respective points of view. Whether children would identify with and perceive themselves as more similar to the dinosaurs and/or the humans was another study question complicated here by artistic choices. The arc of the play dramatizes how the protagonist, Bunk, changes from fearing the dinosaurs to empathizing with them, based on the harmful effects he and Peek are having on their ecological lives. Would children identify with this human character and biologically alive actor, even though he is an adult oil worker with whom they share no age and occupational similarities? Or would they identify with the dinosaurs, given their love of and desire to protect animals, despite the paradoxical fact that the "virtual" dinosaurs were not human or biologically alive? Would the biologically human dinosaur-chorus sufficiently and effectively "humanize" these "cartooned" animals by anthropomorphizing them with emotional feelings? Would audiences feel anger toward Peek for hurting the dinosaurs, however innocently and naively? Would youngsters feel frightened or surprised by the first appearance and size of dinosaur images until they became acclimated to them? Which characters and production elements would trigger which kinds of emotional responses?

Past studies have shown that girls tend to empathize with characters more than boys, in part because they are more willing to report their emotional responses to media (Klein 1995). In general, girls tend to focus on characters' actions, thoughts, and emotions from personally subjective perspectives inside fictive contexts, while boys tend to distance themselves by focusing on production elements, spectacle, and special effects from objective perspectives outside fictive contexts. For these reasons, boys are avid video/computer game players more than girls because most games deal with action-adventures, where the goal is to explode objects or kill characters with physical feats of hand-eye coordination (Cassell and Jenkins 1998). Thus, gender differences became another set of expected results in this study.

Method

Subjects

A total of 32, primarily Euro-American (72%), students were selected to participate by parental permission from one elementary school in a small, midwestern city. There were 10 1st graders (6 girls, 4 boys; mean age = 7), 11 3rd graders (9 girls, 1 boy; mean age = 9), and 11 5th graders (6 girls, 5 boys; mean age = 11), for a total of 21 girls and 11 boys. Students of color (28%) included 1 Native American, 2 Asian-Americans, 3 African-Americans, and 3 Hispanics; 61% of the students in this school come from economically disadvantaged families, and 72% of 5th graders read at basic or above levels per state reading assessments. One student was considered "learning-disabled."

Procedures

The wording of interview questions were piloted with four children from other schools who had seen the third dress rehearsal. Two undergraduate theatre students were trained in procedures at this time.

Children in the present study were bussed from their school to the campus auditorium (seating 1,180) to attend the 1:00 p.m. Thursday performance. They sat in the first 10 rows of the center front orchestra 10' to 22' from the downstage edge of the orchestra pit. First graders sat in the first rows, followed by second, third, and fifth graders. Programs were distributed after the performance on the bus ride home or at school. Teachers were asked not to discuss the play with students before or after the performance until after all children were interviewed so that all responses would come from the performance itself.

Individual, 15-minute interviews, originally scheduled for the following day, were conducted three days later on the following Monday at the school. Unfortunately, a snow storm forced the cancellation of all schools in the district that Friday. Interviews were conducted in separate, quiet stations located in the cafeteria and a computer center alcove nearest students' respective classrooms.

Response Measures and Coding

Most questions were worded open-endedly to garner the richest data possible, while a few were worded as multiple- or forced-choice ratings. Coding measures were devised by categorical patterns or clusters of responses which emerged from transcribed data. (See Appendix for Interview Questions and Coding Scheme.)

1. Viewing Perspectives. Subjects were asked to rate a) enjoyment; b) entertainment or

educational motives for viewing; and, c) ease or difficulty in understanding and attributions.

2. Familiarity with Dinosaurs in Media. Four questions measured previous viewing of dinosaurs through film [e.g., Disney's *Dinosaurs* (which was released on video January 30, ten days before viewing the play), *Jurassic Park, Land Before Time*), television (e.g., *Walking with Dinosaurs, Barney*), video or computer games [e.g., Sega's *Dino Crisis* (rated M), Disney's *Dinosaurs* CD (rated E)], and puppet shows. Subjects were then asked how each medium was the "different" from the play and coded by references to content or form.

3. Dinosaur Schemata. Subjects were asked what they already know about dinosaurs, which was coded by information supplied in the district's Kindergarten science curriculum (i.e., extinction and physical attributes) or other knowledge presumably learned from media exposures. They were also asked, "Why did the dinosaurs become extinct?" as a cued recall measure of Peek's dialogue and to compare against their responses to factuality. Correct responses included asteroids or other environmental reasons, while incorrect responses included the play's verbalized ideas of human intervention or that the dinosaurs simply "gave up":

> PEEK: Why did the dinosaurs become extinct?
>
> BUNK: I dunno, why?
>
> PEEK: The mammals arrived, and they gave up! . . . Yes, mammals! Mice, elephants, gorillas, monkeys, humans! Us! Us! We were a superior species even millions of years ago; some primitive instinct of inferiority awoke in the big dumb dinosaurs, and they knew there was no use in going on! They gave up!
>
> BUNK: Y'mean, it's us?

PEEK: Yes! Our mere presence here has awakened that same instinct in these poor tragic reptiles.

BUNK: They're dying 'cause of us. (28)

4. Dimensions of Perceived Reality. To measure factual/fictionality, they were asked "Could the story of the play you saw yesterday actually happen in real life today? Why or why not?" Responses were coded for acknowledgment of the dinosaurs' extinction or other reasons. Social realism was measured by the question, "If this story *could* happen in real life, would it look more like a school play, a puppet show, a TV cartoon, a computer game, or a movie? Why?" To garner personal definitions of the play's degree or physical realism or spectacle (videocy), they were asked, "Did the play you saw Thursday *look* more like a school play, a puppet show, a TV cartoon, a computer game, or a movie? Why?" Responses to these two dimensions were double-coded by mentions of physical appearances, acting conventions, the screen and its graphics, perceived realities, and viewing contexts.

5. Characters' Actions, Perceived Realities, and Emotions. Cued story recall questions focused on the screen-dinosaur images, the dinosaur-chorus actors, and Bunk (the protagonist) with photo prompts of each separated set from the production. For each character set, children were asked what these characters did in the play (actions); specifically, "What did these dinosaurs do on the screen?"; "What parts [other than dinosaurs] did these people play?" and "How did you know when they switched parts?; and, "What did [Bunk] do and/or decide to do at the end of the play?" Screen-dinosaur actions were double-coded by mentions of movement, mimicking the chorus, talking, and fictive script actions. Chorus parts were double-coded as objects and narrators, and changes were coded by mentions of acting or screen changes.

To measure perceptions or judgments of degrees of reality, subjects were asked whether the screen-dinosaurs, the dinosaur-chorus, and Bunk were "actually real," "realistic," or "make-believe," and what made them so. Categorical codes here included medium distinctions by technology or humanness, knowledge of theatre conventions from *inside* the production, and social un/realism statements from knowledge compared *outside* the production. [NOTE: Coding schemes for perceived reality used in the *Pipe Dream* study were considered but rejected in favor of more effective categories which emerged from this data. However, the concept of distinguishing combined cues culled from inside or outside the production was applied here.]

As a potential measure of spectacle/videocy, subjects were asked to identify the feelings or emotions the screen-dinosaurs and dinosaur-chorus felt and how they knew these characters felt these feelings. Coding here was divided by character emotions attributed *inside* the fictive situation (e.g., conflicts against Peek and Bunk) or actors' emotions and other media knowledge about dinosaurs inferred from *outside* the fiction of the play. [NOTE: Again, previous coding schemes used in the *Crying to Laugh* empathy study were considered, but responses to the two general questions used here about dinosaurs could not be applied with as much specificity and relevance. Instead, I decided to simplify emotion codes by in or outside the given fiction, based on emergent patterns.]

6. Spectacle/Videocy and Artistic Motives. To measure whether the use of computer animation on a screen dominated viewers' consciousnesses or drew them out of the fictive world, subjects were asked whether they watched the dinosaurs on the screen or the chorus people, and what made each "interesting" to watch. Categorical codes here included physical appearances, mimicking the chorus, talking, perceived realities, and emotional qualities. Next, they were asked

to infer artistic motives: "Why do you think they put the dinosaurs on the screen *and* these people on stage? What difference did it make?" Here, categorical codes involved differentiating types of dinosaurs, perceived realities and talking, media conventions, and audience perspectives.

7. Main Idea or Theme of the Play. As a replication question in keeping with past theatre studies, subjects were asked what Bunk "learned from the play" and how they knew he learned it, after they had recalled what he did or decided to do at the end. Responses to these four questions were double-coded together for visual, verbal/aural, and combined aural/visual actions from the play. The intention was to find out whether children understood Bunk's offstage action (i.e., blowing up the cave entrance) and motives (i.e., to save the dinosaurs' lives from extinction).

All variables were combined across all responses as respective "scores" as follows (see Appendix):

Inside Production Cues:
    Visual (physical appearances, acting, movement, mimicking, chorus-objects)
    Medium (screen, human, technology)
    Aural/Verbal (talking or not, chorus-narrators)
    Bunk's final actions
Inside Fiction:
    Script content, emotional attributions, and consequential themes
Outside Production Knowledge:
    Perceived realities, including social realism
    Dinosaur knowledge
    Media exposures about dinosaurs (0-4)
    Viewing contexts
Perceived Reality Labels: make-believe, realistic, actually real
Videocy:
    Screen and Watched
    Play Looked Electronic (13 children)
    Story would look Electronic (27 children)

Story would look like Theatre (3 children)
Play looked like Theatre (19 children)
Artistic Reason for both dinosaurs is Theatre (3 children)

Results

Personal Ratings

a. Enjoyment. The majority (84%) reported that same grade-level students "in another city" would like (or enjoy) this play "a lot." One 1st and two 5th graders reported "a little," and two 1st graders said "not at all."

b. Motives for Viewing. Children reported rather evenly divided motives for watching the play "for fun" (38%), "to learn something" (44%), or both (13%). First graders were more likely to report educational motives, while fifth graders preferred watching it for entertainment.

c. Understanding and Attributions. The majority (88%) rated the play as "real easy" (28%) or "sort of easy" (59%) to understand, primarily because the screen (e.g., "that big TV" with "graphics") showed visual information (38%), especially which type of dinosaur each chorus member portrayed. Additional attributed reasons (which were double-coded) included how the chorus acted out or told about the dinosaurs (22%), aural/verbal clarity (i.e., speed, volume, vocabulary) (28%), and the script's content or fictional premise (19%). Two 3rd graders noted that the play was "funny" or "silly," and "You didn't have to do anything [like] all the talking."

The following table summarizes personal ratings at a glance.

Table 1

Personal Ratings of Enjoyment, Viewing Motives, Understanding, and Attributions

	1st	3rd	5th	Totals
Enjoyment:				
a lot	7	11	9	27 (84%)
a little	1		2	3
not at all	2			2
Motives:				
to Learn	8	4	2	14 (44%)
for Fun	1	3	8	12 (38%)
Both		3	1	4 (13%)
(don't know)	1	1		2
Understanding:				
real Easy	2	3	4	9 (28%)
sort of Easy	5	7	7	19 (59%)
sort of Hard	2	1		3
real Hard	1			1
Attributions:				
Screen	3	3	6	12 (38%)
Talking/Aural clarity	2	4	3	9 (28%)
chorus Acting	1	3	3	7 (22%)
Inside Fiction	2	1	3	6 (19%)
Viewing Context		2		2
(don't know)	3		2	5

Dinosaur Familiarity from Media Experiences

To help assess children's schemata about dinosaurs by their amount of media exposure to such, they were asked whether they had seen a movie, TV, or puppet show, or played a video or computer game about dinosaurs, and how each experience differed from the play they saw (see Table 2). Most children recalled seeing a movie (72%) (i.e., Disney's *Dinosaur*, *Land Before Time*, *We're Back*) or a television show (66%) (i.e., "Walking With Dinosaurs," a documentary on the *Discovery Channel*; *Animal Planet*; a trailer for Disney's *Dinosaur*; a cartoon; or, GPN

Graphics with robots). Here, many noted more formal differences between movies/television and theatre regarding their respective medium qualities (e.g., "bigger"), physical character appearances (e.g., "more real on the TV," "weren't wearing clothes") or scenery (e.g., "more caves," "in deserts and sand," "weren't underground") in comparison to the play, more than content differences regarding their stories (e.g., "eating people") and characters (e.g., numbers of dinosaurs; "no monkeys"). One fifth grade girl focused on the emotional differences between seeing the play and a television documentary on *Animal Planet* because the play "wasn't just facts. . . They make you get excited. . . . It seemed like the TV channel's kind of boring 'cause all it did was tell you about facts about dinosaurs." One fifth grade boy agreed that "Walking With Dinosaurs" on the *Discovery Channel* "took hours and hours;" yet another enjoyed its "really cool" but "fake" "3-D animation."

About one-third (31%) had played a video or computer game (i.e., about "fighting," "killing," or hunting dinosaurs in *Carnivores* before they "eat you"). Although national surveys (e.g., Huston and Wright 1997) find that boys play electronic games far more frequently than girls, primarily for their action-adventure content, in this sample, 5 girls (2 1st, 1 3rd, and 2 5th graders) and 5 boys (2 1st and 3 5th graders) reported having played dinosaur games. In comparison to the play, most noted formal differences in the games' interactive qualities more than content differences. For example, "You could move [the dinosaurs] with your own mouse by yourself" (1st grade girl); "You can go through mazes with dinosaurs and then you can pick out their skin types, how you think they might be" (3rd grade girl); "We didn't have to act like the dinosaurs" (5th grade girl); and, "You controlled it" (5th grade boy);

Few children (16%) had seen a puppet show or played with dinosaur puppets or "fuzzy, cuddly, warm" toys; and all noted the formal differences of puppetry in comparison to the play. One first grade girl, enrolled in KU's drama class, had created her own puppet show and preferred "to do it by yourself, instead of it [actors on stage] doing it for you."

Table 2

Media Familiarity and Differences from Play

	1st	3rd	5th	Totals
Movie:	7	8	8	23 (72%)
different Content	6	6	3	15 (47%)
characters	4	3	3	10
story	2	3		5
different Form	3	5	9	17 (53%)
scenery	1	2	2	5
char. appear	1	1	3	5
medium	1	2	4	7
Television:	7	7	7	21 (66%)
different Content	3	4	2	9 (41%)
characters	1	2	1	4
story	2	2	1	5
different Form	4	4	5	13 (59%)
scenery	2			
char. appear	1	3	1	
medium	1	1	4	
Video/Comp Game:	4	1	5	10 (31%)
different Content	2		2	4 (36%)
characters	1			1
story	1		2	3
different Form	2	1	4	7 (64%)
medium	2	1	4	7
Puppets:	3	1	1	5 (16%)
different Form	3	2	1	6 (100%)
char. appear.	1	1	1	3
medium	2	1		3
Different Content	11	10	7	28 (39%)
Different Form	12	12	19	43 (61%)

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Dinosaur Schemata

a. Dinosaur Knowledge

When asked to name some things they know about dinosaurs, children noted their extinction (47%) (e.g., "dead" or "not living anymore"), their physical attributes (59%) (i.e., sizes and types from bones or fossils), and/or their activity-based attributes (50%) (i.e., they eat meat or plants, or lay eggs). This particular information constitutes the district's Kindergarten science curriculum, although these facts could also have been learned from other media sources.

Nevertheless, for coding purposes, this specific knowledge base was separated from other general facts or ideas which could be derived from mass media programs (47%). For example, first graders also reported that "There's longnecks" (a term used in *Land Before Time*); they "growl and stomp their feet a bunch," "fight and eat a lot," live among "palm trees" and "a really big ocean" (e.g., *Fantasia*), and "they're good to see." Third graders added that they are "reptiles" with "different colors" (e.g., *Land Before Time*) and that "some are mean and some are nice," or they "eat people" (e.g., *Jurassic Park*). One 3rd grade boy, who reported seeing only the TV trailer for Disney's *Dinosaur* video, explained, "They are extinct and some scientists may wanna get some DNA from the bones and might make the dinosaurs and study them. . . . and there's a new dinosaur hopefully more better than the T-Rex." Three 5th grade boys elaborated upon their knowledge: One, who could not recall seeing any media depictions of dinosaurs, knew that "they're birds and not lizards . . . and they have a lot of scales and no feathers;" while two others, who were quite versed in dinosaur media, identified their eating distinctions as "carnivores, caravores, omnivores," and "herbivores."

b. Dialogue Recall

When asked why the dinosaurs became extinct (i.e., Peek's dialogue), over half (59%) gave the following correct answers: that an "asteroid," "meteor," "comet," or "volcano" had destroyed them (9) (4 1st; 2 3rd; 3 5th); the environment changed in some drastic way to cause their deaths (7) (3 1st; 2 3rd; 2 5th) (e.g., "the weather changed;" "they couldn't live in the hotness;" they had no food or water; or "they sunk in the mud"); or, that scientists don't really know for certain (3) (1 3rd; 2 5th). Others (31%) mistakenly thought that human beings, which didn't exist during the time of dinosaurs, caused their deaths (1 1st; 3 3rd; 4 5th) (e.g., by "polluting their water") or that the dinosaurs "gave up"(1 3rd; 1 5th)---the fictional reasons given in the play's dialogue. Two of these children did answer the question from the play. The remaining 4 children (2 1st; 2 3rd) admitted not knowing the cause of this extinction.

c. Factuality

When asked whether "the *story* of the play could actually happen in real life today," all but 5 children (1 3rd; 4 5th) didn't believe so primarily because dinosaurs are extinct or dead (78%). Other reasons the story couldn't happen today were because "that's just something that happened a long time ago;" there's no food for them to eat or room for them to roam; they couldn't live on earth very long; and, "dinosaurs can't talk like humans can." One 3rd grade girl, who knew that dinosaurs are extinct from a movie she'd seen, thought it could "maybe" happen because the play takes place underground "and usually people don't go underground unless there's like already a tunnel there." While one fifth grader did not know, three fifth grade boys suspected the story could happen for the following reasons:

> Because somebody might do the same thing. [try to look for or find dinosaurs in a cave?]

> Because they don't exactly know why the dinosaurs were extinct and they find dinosaur fossils totally preserved in lots of places, so they might actually have some that were alive.
>
> Yeah, about like the dinosaurs acting, but not talking to each other. . . . It's just like they *could* be preserved down there in caves and stuff, but there's no proof.

In sum, from responses across questions, all 32 children appeared to know that dinosaurs are extinct, although answers to some questions implied their sometimes shaky knowledge about the actual meaning of the term "extinction." With few exceptions, they understood that the play was a fictional account about factually extinct dinosaurs.

Perceived Reality in Media

a. Story Medium - Physical Realism of Story

When asked which (fictional) medium the story (of the play) would *look* like "if it *could* really happen in real life," all but 5 children (84%) (2 did not know) chose electronic media, primarily "a movie" (72%) (8 1st; 9 3rd; 6 5th), or TV show (1 1st; 2 5th), and/or a video or computer game (4 5th). *Apparently, whether "real life" happens live in person or as a recorded event makes little difference to them.* First grade reasons for choosing a movie (or TV show) relied on physical appearances (4), because "Things are much bigger" (i.e., with camera close-ups), "It's moving and it's loud;" and perceived reality (3), because "they look like real dinosaurs," and "because dinosaurs are extinct. If it was real, then we would have tons of big eggs." In other words, because dinosaurs no longer exist, a movie would be an appropriate depiction "because they're just acting." A movie on video also provides viewing pleasure "because it's fun to see over and over."

Third grade reasons for choosing a movie relied on perceived reality most (5) because movies, which are "more realistic than plays and puppet shows," "use computers and stuff to make it look real and so . . . [it] probably looked like it really happened." Again, from an audience standpoint, movies "are usually more interesting to see" and "then people could understand it much more well instead of, well, a puppet show." Only one 3rd grade girl thought that if the story could really happen in real life, it would look most like a school play "because it's like people acting it out, and it isn't animated stuff."

Fifth graders chose a movie or a TV show for the same reasons "because movies have cool graphics" that allow for greater physical realism (3), even though "most movies are fake" and TV cartoons depict dinosaurs that aren't "very smart." Given their wider knowledge of media genres, the story could also be "either a movie or a video game because there's not really enough information to have like a TV show," (i.e., with ongoing, weekly situations). The story could also be depicted best as an electronic game (4), because computer games "pay attention to all the movements and the [dinosaurs'] distinct markings" and "the way they move." Only two fifth grade girls chose a school play "because there would be people in it" and "they probably couldn't act it out as a puppet or a movie."

As these responses indicate, most children answered this question by referring to the physical ability of movies, television, and electronic games to heighten "real life" with bigger movements and more realistic, visual appearances. Only 3 girls recognized that the inclusion of live people in a school play distinguishes "real life" from electronically mediated media. (If children considered that human beings weren't around during the time of dinosaurs, then using live actors in a play would be a moot medium choice.)

b. Play Medium - Physical Realism of Theatre/Spectacle

The subsequent question asked respondents to choose which medium the play looked like and to explain why. Here, almost half (47%) thought it looked "more like" "a school play" or a puppet show (13%) and/or electronic media (41%) [a movie (31%), a TV cartoon (25%), a computer or video game (22%)]. Four out of the fifteen who chose "school play" also added another electronic medium (i.e., a movie or computer game).

Fifteen children (4 1st; 7 3rd; 4 5th) chose theatre (a school play) primarily for acting reasons (10), in addition to physical appearances (7), because "they made it by human[s]," "the people were acting out the dinosaurs" and "you could see who they were," and the actors "had to rehearse." One third grade girl took "school play" literally by noting that the actors "were still going to school, but just in a higher grade." Another third grade girl pointed out that "School plays look much different than what real life things look like." The fact that actors "weren't dressed up" as dinosaurs and wore costumes was another distinguishing theatre reason. The viewing context was also taken into consideration by a fifth grade girl who noted the "stadium" venue with "all these kids around in [the audience]."

To four children (2 1st; 1 3rd; 1 5th), the actors' movements also suggested a puppet show "with people playing the puppets. . . . because the people were *being* dinosaurs [and] moving them [on the screen];" and, the actors "kind of moved like puppets" "because they're all laying down and not moving one second, and then they're all hopping around freaky."

The remaining 13 children (41%) (4 1st; 3 3rd; 6 5th) thought the play looked "more like" electronic media only, primarily because they pointed out the "screen" (11) which "looked like a movie" or "a big computer screen." *In effect, their calling attention to the screen indicates a consciousness of "videocy" or technological "spectacle."* The use of a TV or movie screen enhanced perceived reality because, as three third grade girls pointed out, the actors "weren't as big as real dinosaurs;" therefore, "you can make them bigger and you can computerize them so they look real" and "walk [and] move how the real dinosaurs would do." The play's screen also reminded 7 children (1 1st; 1 3rd; 5 5th) of an interactive computer game "because whenever the people moved down there, [the screen dinosaurs] would move on the back" (5th grade boy), and "because on computers, you could choose if you want to go away from the dinosaurs or if you stay close to the dinosaurs" (5th grade girl). Four children (including two fifth grade boys) thought the play looked more like an animated "cartoon" because "TV usually does animals dancing all around a lot" (1st grade girl) and the actors "were dressed up in polka-dotted clothes" (3rd grade girl). The viewing context was also taken into consideration by a first grade girl who chose "a movie" "Because it looked like we were the audience and they were on the TV. And we were on our chairs, just sitting and watching them act. . . . They were acting like they had a TV. . . . like they [were] camcording them." Two fifth grade boys chose "a movie" because the play's script seemed "more like it'd be movie material instead of the other [media]" with "a lot of movie-type things that were sad and funny; like KingKing couldn't even catch any meal, and there were some sad parts, like when they started to die at the end."

In sum, over half (59%) thought the play looked more like theatre (47%) or a puppet show (12%), primarily because actors, who seemed like puppets in four instances, acted out the dinosaur characters in "pajama" costumes. The remaining 41% perceived the play more like electronic media, primarily because they called attention to the screen with its bigger, moving, and more "real" dinosaurs.

Table 3

Medium Choices for Perceived Reality

If Story could happen, would Look More like (because):

	1st	3rd	5th	Totals
Electronic Media:	**9**	**9**	**9**	**27 (84%)**
Movie	8	9	6	23 (72%)
TV cartoon (or show)	1		2	3
&/or Video/Computer Game			4	4
(Perceived Reality)	3	5	4	12 (44%)
(Physical Appearance)	4	1	3	8 (30%)
(Screen)	1	2	1	4
(Viewing Context)	1	2	2	5
(Acting)	1			
(Don't Know)	1	2	1	
Theatre ("school play")		**1**	**2**	**3 (9%)**
(Acting)		1	2	
Don't Know	**1**	**1**		**2**

Play Looked More like* (because):

	1st	3rd	5th	Totals
Theatre ("school play") or	**4**	**7**	**4**	**15 (47%)**
Puppet Show (actor-puppets)	**2**	**1**	**1**	**4 (13%)**
(Actors Acting)	5	5	2	12
(Physical Appearance)	3	2	2	7
(Perceived Reality)		2		2
(Viewing Context)			2	2
(Screen)		3?		1
Electronic Media only:	**4**	**3**	**6**	**13 (41%)**
Movie	4	4	2	9
TV show/cartoon	3	3	2	8
Computer/Video Game	1	1	5	7
(Screen)	2	4	5	11
(Physical Appearance)	2	2	1	5
(Perceived Reality)	1	2		3
(Viewing Context)	1		3	4

[*overlapping media choices]

Screen and Chorus Dinosaurs

a. Screen Dinosaur Activities and Actions

When asked what the dinosaurs on the screen did, most children (75%) (6 1st; 9 3rd; 8 5th) pointed out their physical production features; that is, these images moved (63%) (e.g., walked, flew) and/or mimicked (28%) the chorus' movements. Interestingly, while 2 fifth graders astutely pointed out that these dinosaurs "didn't talk [because] the people talked for them," 7 children (1 1st; 3 3rd; 3 5th) mistakenly assumed that these screen images "spoke," "talked," or more specifically, "talked out their problems," or "stomped around." These latter responses suggest that these children remained in the fictive world by blurring the actors' voices (and stomping sound effects) with the silent screen images, as the director and scenographer intended.

In contrast, 7 children (22%) (3 1st; 1 3rd; 3 5th) answered this question *only* from within the play's fictive content, usually by summarizing the dinosaurs' superobjective as follows:

> They fighted [and] they tried to get the humans away from the their home. [1st grade girl]
>
> They standed there and tried to scare them off. [1st grade girl]
>
> One of them wanted to eat another dinosaur, and he said, 'This one's already dead.' [1st grade boy]
>
> They were trying to get the nonecks away. [3rd grade girl]
>
> They tried to get rid of the people, so they could lay their eggs. [5th grade girl]
>
> . . . The dinosaurs were fighting, and then that one [in photo] pretended to play dead, and then got back up. [5th grade girl]
>
> They had like interacted with each other . . . . They talked out the problems that they had about [the people]. [5th grade boy]

Four children who noted physical features also added these fictive actions:

> These dinosaurs came up...on the screen....And then they died. [1st grade girl]

> ...And sometimes the dinosaurs try to eat each other, because the red one...was really, really hungry, so he tried to eat them. [3rd grade girl]

> They fought a little bit [and] they pretended to be dead at the end. [3rd grade girl]

> Sometimes they fought... [5th grade girl]

Table 4

Screen Dinosaurs Activities/Actions

	1st*	3rd	5th	Totals
Production Features:	6	10	8	24 (75%)
Moved	5	9	6	20
Mimicked actors	2	3	4	9
Didn't Talk			2	2
Talked	1	3	3	7
Fictive Script Actions:	4	3	4	11
(only)	3	1	3	7 (22%)

[* 1 1st grader could not remember what they did.]

In sum, while most children (75%) attended to the dinosaurs' physical activities on the screen, the few (22%) who reported their fictive actions or superobjectives indicates that their consciousnesses were not distracted by the screen's "videocy."

b. Chorus Roles

When asked what "parts" the chorus played *other than dinosaurs*, most children (63%) recalled various physicalized objects such as mushrooms, eggs, plants, and rocks. A few said they played "people" or "humans" (2 1st; 2 3rd), without further elaboration; while others added that these "people" "told" or "talked about dinosaurs" or explicitly served as "narrators" who "tell the story" (1 1st; 2 3rd; 4 5th). This attention to human narrators indicates that they were aware of the script's breaks in the fictive world by its presentational frame. Four children (3 1st; 1 3rd) could not recall any parts other than dinosaurs or didn't know any other parts.

c. Changing Chorus Roles

When asked how they knew when chorus members changed or switched roles, most (63%) reported relying upon the changes in the "background" or the screen's changing "pictures" more than on the actors' physical movements or different "shapes" (31%), including costumes. A few (18%) saw and used both visual means.

In eight cases, children noted the chorus' costumes, as if they were answering how they knew that the same chorus actor played different *dinosaur* characters, rather than answering the question asked; that is, how they knew when the actor was playing a *new* character (e.g., an object or narrator). Perhaps as a function of delayed memory, four girls mistakenly recalled that the actors changed their costumes (and one boy appeared to be guessing), indicating their focus on actors' physical appearances:

> I think they switched their pajamas. . . . [1st grade girl]
>
> Well, they would go behind there [i.e., the screen] and that guy [Dave, a narrator] switched clothes. . . . [1st grade girl]
>
> They went back there [i.e., behind screen] and jumped in clothes real fast [to dress up like people], and then got back on display and beed [sic] somebody. [1st grade girl]
>
> Because like the suits would look different than it was before. [3rd grade girl]
>
> I don't know. Probably different looking stuff, clothes. . . . [3rd grade boy]

Three children noted that actors wore the same costumes, but changed their acting behaviors:

> 'Cause like when one came out, it would be a different dinosaur, with the same costume. . . . and they would sit down like one [dinosaur]. [1st grade girl]
>
> Because they had the same suit on. . . . [and] they were shaped like a egg and on the screen it showed them. [1st grade boy]

> You could see their clothes, and they were wearing the same things. [3rd grade girl]

Three other children knew character changes occurred by listening and noting narrations:

> 'Cause . . . I was listening . . . He [Dave] would switch and he would talk about dinosaurs. [1st grade boy]
>
> When they talked about them. 'Cause one of them stopped and talked, but the others keep on going. [1st grade girl]
>
> One of them would say something like, "The dinosaur's extinct because of such-and-such. . . . [5th grade girl]

In sum, most children (88%) recognized that chorus members played objects and/or human narrators (in addition to playing different dinosaurs), primarily by watching changes in the screen's imagery (47%), actor behaviors (31%), or both (18%).

Table 5

Chorus Roles	1st	3rd	5th	Totals
Objects &/or	4	7	9	20 (63%)
People/Narrators	3	4	4	11
(Other dinos=don't know)	3	1		4 (13%)

How Knew Roles Changed	1st	3rd*	5th	Totals
Screen	3	6	6	15 (47%)
Acting	5	3	2	10 (31%)
(clothes only)	2	2		
Both	2	1	3	6 (19%)

[* 1 3rd grader did not know.]

Characters' Perceived Realities and Emotions

a. Screen Dinosaurs' Reality

When asked to define the screen dinosaurs' level of reality, 1st graders (9) were more likely than 3rd (5) and 5th graders (3) to label them "make-believe" (53%) (r =), primarily because they were images on a screen, like "TV," a "video game, " "film/strip," or "movie":

> It's just somebody that drew on the picture. [1st grade girl]
>
> 'Cause it's a screen, and they're playing some kind of--I don't know how she did it--but I think they're playing video games maybe, 'cause it looks like video games. [1st grade boy]
>
> 'Cause a machine did it. [1st grade girl]
>
> It was on a TV screen and they could talk. [1st grade girl]
>
> [The back screen] kind of looks like a computer made it; a image of it or something like that. [5th grade girl]

Other children labeled them "make-believe" for reasons of non-realistic physicality:

> Because they ain't real dinosaurs on the stage. If there was, then they would be making a lot of noise. [1st grade girl]
>
> Because it looks like they're toys. [3rd grade girl]
>
> 'Cause that's not really what they really looked like, and it looks like they have broken legs and heads and stuff and necks. [3rd grade girl]
>
> They kind of were weirdly colored. [3rd grade girl]

Third (5) and fifth graders (7) were more likely to label the screen dinosaurs as "realistic," according to comparisons to physical reality; while a few noted the "3-D" sense of "graphics":

> 'Cause these dinosaurs were back in [the] olden days. [3rd grade girl]
>
> Because they look like--I know some things about some of my dinosaurs . . . . [3rd grade boy]
>
> . . . I think real, but realistic by the color, the action, and the detail. [3rd grade girl]
>
> But the colors were [realistic], 'cause people never know what the colors of the dinosaurs are. . . . [And] it was some type of machine . . . and also on the big screen. [3rd grade boy]
>
> . . . Because of the way they acted. . . . like that mating dance. It looked like they were actually wanting each other. And it actually looked like one of the dinosaurs was actually *dead*. . . . [5th grade boy]
>
> They're extinct, but they look very realistic 'cause of the . . . markings. [5th grade boy]

> . . . Those are like the real kind of dinosaurs that I've seen in books . . . . [5th grade boy]

> Well, they *looked* realistic, but they weren't really real [because of] the shape and that they were real kinds of dinosaurs. [5th grade girl]

Three children, one in each grade, considered the screen dinosaurs to be "actually real," because:

> I can't tell. Because it was on a blank, black piece of big TV. I can't tell by TV. I don't know what was moving them. [1st grade girl]

> Because they looked real. [3rd grade girl]

> They were real dinosaurs, but they were made to perform there [on the screen] and down there [on stage?]. 'Cause their arms, they didn't move. All they did was walk and fall down. [5th grade boy]

In sum, while most first graders perceived the screen dinosaurs as "make-believe" because they existed as electronic media on a screen, older children perceived them as looking "realistic" largely by their physical appearances or behaviors.

b. Screen Dinosaurs' Emotions

When asked what feelings or emotions the screen dinosaurs felt, the majority of children (72%) ascribed human emotions to these images by attributing various, mostly negative affects (i.e., sad, scared, mad, upset, worried) to main conflicts against Peek and Bunk from within the fictive context of the play, as these selected examples demonstrate. In a few cases (as emphasized below), some children even ascribed the chorus' dialogue to the screen dinosaurs:

> [They felt] sad 'cause the people was taking over their home. [1st grade girl]

> Sad. . . . because the explorers was in their cave and they didn't want them to. [1st grade boy]

> [They felt] afraid of the humans. [1st grade African-American boy]

> Maybe sad and kind of scared. . . . because they were worried about the people coming in and like taking over. And they were sad because they knew that they were probably going to die. [3rd grade Hispanic girl]
>
> I think they were kinda angry because they didn't want the people to mess with the land and mess with them. [3rd grade boy]
>
> I think they felt kind of bad, worried, or sad being extinct. . . . by the action and all the talking that was going on. [3rd grade African-American girl]
>
> Sad, 'cause somebody came in and polluted their water . . . *'cause they said it.* [5th grade boy; emphasis added]
>
> [They felt] fear, and they were a little bit angry. . . . *Because they said that they were* . . . . [5th grade girl; emphasis added]
>
> Kind of scared because the people were coming and giving them the disease that they had or whatever. [How do you know they felt scared?] Because they acted like they didn't want to leave and that they didn't want to die or anything. But nobody knew what to do. [5th grade girl]
>
> Kind of sadness about how they might die out if there's like so [many] people that are gonna want to go down there and see them. They were kind of scared. [How do you know they felt sad and scared?] The way they acted. [How did they act?] *They acted like people almost*, and they were kind of scared and some of them were kind of like mean. . . . [5th grade boy; emphasis added]

As this latter response indicates, most children fused both sets of dinosaurs as one fictionalized entity by anthropomorphizing the screen images and projecting the chorus' physical and vocal behaviors onto the screen, just as the director and scenographer had hoped. These projections of human emotional expression onto computerized images suggest that viewers' consciousnesses were not dominated by theatrical "videocy" as hypothesized.

One fifth grade boy was explicit about why he attributed human feelings (i.e., scared, hungry, and tired) to the screen dinosaurs because "there was people acting them." In fact, only four other children recognized the inability of screen pictures to feel any human emotion, as demonstrated by these responses:

> They felt dead. . . . 'cause they're not alive. [1st grade girl enrolled in KU drama class]
>
> [They felt] sad. . . . because they don't like [feel] joy and play or nothing like that. They're just walking around and not having any dinosaur smile. They're just moving around. . . . They looked like they was on TV. [1st grade girl]
>
> . . . . I don't know. : . . 'cause there's them people talking for the screen and you could understand [them] much better. [5th grade girl]
>
> They didn't really feel anything. They're just walking around, falling down. [How do you know they weren't feeling anything?] Well, the people on the stage did, but these guys up here [on screen] just walked around, turned around, [and] went through each other. Like the guy that was supposed to be the Tyrannosaur on the stage, he was going, "I'm hungry." He was gonna like starve. But the thing on [the screen] was just bobbing its head around. [5th grade boy]

Some first graders also seemed to rely on their schemata of dinosaurs from media outside the fictive world of the play:

> [They felt] angry. . . . because that's how dinosaurs are sometimes. [Native American girl]
>
> They like to growl [and] roar. . . . because it just felt so good in their throat. [African-American girl]
>
> They felt big. . . . because they weigh a lot. [Euro-American boy]

Ironically then, although most children defined the screen dinosaurs as "make-believe" or pictorially "realistic," they nevertheless ascribed human emotions to these computerized images.

c. Chorus Dinosaurs' Reality

When asked to define the levels of reality for the chorus dinosaurs, most children defined these actors as "actually real" (59%) or "realistic" (25%), primarily because they were "real people" with human abilities and traits (78%). Human traits included "walking," "moving," "talking in normal voices," breathing, having hearts, being able to touch and smell--"because they're in real life. Just like us." Like others, one fifth grade boy noted the obvious: "I know they were real people. 'Cause. You can't have a play like this when it looks *real* and then they have a real screen behind them with fake creatures. They wouldn't have a screen *showing* you a screen either" (his emphases). Other children (28%) applied their knowledge of theatre conventions by acknowledging that these actors were "playing parts" and wearing costumes. A few (16%) applied their knowledge of dinosaurs by noting that the actors "acted like" dinosaurs. For many of these same reasons, a few children perceived the chorus as "make-believe" knowing that:

> They ain't real dinosaurs on the stage; they're just acting like them. [1st grade girl]
>
> They're just playing [and] pretending to be real. [1st grade girl]
>
> They had suits on. And the way they walked and stuff. [1st grade boy]
>
> Probably the spots or the color [or] the patterns on their clothes. [3rd grade girl]
>
> They weren't actually in like real costumes like of dinosaurs, but they still acted like they were. [5th grade girl]

In sum, while the chorus dinosaurs were perceived primarily as human people, most children acknowledged the basic theatrical convention that they were acting like dinosaurs as realistically as is humanly possible, according to implicit rules of realism. It appears that children "understood" that humans could not be realistically costumed as dinosaurs, given their physical limitations. However, despite the chorus' humanity, no child noted their capacities for human emotion--until directly and subsequently questioned (below).

d. Chorus Dinosaurs' Emotions

Ironically, when asked what emotions the chorus dinosaurs felt and how they knew the chorus felt these emotions, children split their reasons between *character* emotions interpreted from inside the fictive world (4 1st; 1 3rd) using actors' performance cues (3 3rd; 4 5th) (38%) and *actor* emotions outside the fictive story (47%) (4 1st; 5 3rd; 6th 5th). The remaining five children (15%) (2 1st; 2 3rd; 1 5th) did not know emotions or how they knew. Emotions recalled from inside the fictive story only reflected similar emotions ascribed to the computerized dinosaurs:

> Sad . . . Because the other humans were taking over. [1st grade girl]
>
> Sad . . . Because they wanted the nonecks to go away . . . And so they comed up with the idea and . . . they said, "Let's do what our ancestors did and pretend to be dead. [1st grade girl]
>
> Sad . . . . Because the people on top was coming in their cave. [1st grade boy]
>
> [They felt] happy when the people went away. And they were feeling sad when they didn't go away. . . . [1st grade girl]
>
> They were surprised because the nonecks were there, and they were ruining their water. [3rd grade girl]

Some attributions for characters' fictive emotions were interpreted from the actors' physical appearances or vocal expressions inside the production:

> They were scared, shy. . . . By the way they looked maybe. [3rd grade girl]
>
> They didn't want the humans to mess with them. [How do you know?] From watching the play. And they also kinda talked about . . . they didn't like the humans to . . . be in their little cave . . . . [3rd grade boy]
>
> I think they felt like the [screen] dinosaurs, how they got extinct. . . . Because at the action, how they were moving and stuff, and how they woke each other up. . . . [3rd grade girl]
>
> I don't know. You mean how they felt for the dinosaurs? [Yes.] I don't know, how they felt. [prompt . . .] They were silly. And they were cool to watch. [How come you couldn't tell what they were feeling?] I think they were feeling kind of upset that the people were invading their space. . . . 'Cause they had *detail* in their voice. [5th grade girl; her emphasis]

> . . . They wanted them out, so they're like kinda angry. [How do you know?] Their actions and the way they spoke. Things they did. [5th grade boy]
>
> [They felt] probably the same as the [screen] dinosaurs. . . . [because] they were acting like the dinosaurs. [5th grade boy]
>
> I think they felt kind of like the [screen] dinosaurs. Like they didn't want the people there exploring them. [How do you know?] You could kind of tell it in their voice. . . . Well, when they saw the nonecks, they were like, "*What! Who are they?*" and then you could kind of hear how they were feeling. [5th grade girl; dialogue stated with surprise, animated expression]

While children above answered the initial question by starting with the *characters' fictive* emotions, others answered by starting with the *actors' performance behaviors* outside the fictive story. This was especially true of more third and fifth graders who began by acknowledging the actors' pretense and by also relying more upon the actors' movements and vocal expressions to infer the *actors'* more than the dinosaur characters' emotions:

> I think they were just acting the parts, and they were just going along with it, and like they were scared that the longnecks were coming. [How do you know they felt scared?] Because how they talked with the dinosaurs and they moved and stuff. [3rd grade girl]
>
> Probably the same as the [screen] dinosaurs, because they were just pretending to feel it. [How do you know?] Probably because they acted like it. [3rd grade girl]
>
> . . . . They were mean to each other and stuff. [How do you know?] They probably didn't feel those feelings. [3rd grade girl]
>
> Well, they felt talking, they felt moving. . . . The heart beating. . . . [1st grade boy]
>
> Sad, happy. . . . 'Cause of their faces. [3rd grade girl]
>
> You mean playing it, or just in the thing? [repeated question] They felt anxious, and worried. [How do you know?] I don't know. [3rd grade girl]
>
> [Answered from the given photo] It looks like they're sort of mad or cautious. . . . Because of the way they look in the picture. [5th grade girl]

One first grader appeared to answer from her outside knowledge of dinosaurs:

> Real scary. . . . Because that's how dinosaurs do. They feel scary and they want to scare other dinosaurs away just like the T-Rexes. They scare little baby dinosaurs, and then they scare the other big tall ones 'cause they're afraid of T-Rexes. [1st grade girl]

Two first graders and five fifth graders stepped even further outside the fictive framework by imagining the *actors' emotions as a function of their performative roles*:

> They probably felt embarrassed or something. [How do you know?] Because they were going back there a bunch. [How come?] Because there was a bunch of people sitting and watching them. Sometimes you get embarrassed; you get like red. [1st grade African-American girl]

> . . . . They felt like they were trying to be dinosaurs. . . . They felt happy. . . . 'cause they would act happy. . . . 'Cause they felt like they were in a cave. 'Cause they are in one. [1st grade girl in KU drama class]

> Probably real excited that they were doing a play. [How do you know?] Because they wanted to be in the play. [5th grade girl]

> Mostly happy, I guess. . . . 'cause they looked like they were having fun up there. [5th grade Asian-American boy]

> They felt that--There were so many people watching them. And if I mess up, then they'll start laughing at me. [5th grade girl]

> I think they would--I would feel nervous. They were very good actors though. [5th grade girl]

> Sad and happy in their parts 'cause they had to act sad and bored and mad and hungry and stuff. . . . Because of the way, like the actions and the way they performed. [5th boy]

In sum, while most children perceived the chorus as "actually real" or "realistic" human actors with human traits (78%), they divided their attributions for the chorus' emotions between those felt as characters inside the fictive story (38%) and those felt as actors outside the fiction (47%). The following table summarizes these results at a glance and adds Bunk discussed below:

Table 6

Characters' Perceived Realities and Emotions

	1st	3rd	5th	Totals
Screen Dinos				
Make-Believe	9	5	3	17 (53%)
Realistic		5	7	12 (38%)
Actually Real	1	1	1	3
(because)				
Technology	8	4*	6	18
Physical Realism	1	8*	5	14
[* 1 3rd grader noted both reasons; 1 1st grader didn't know why.]				
Emotions Felt:				
Inside Fiction	5	9*	9	23 (72%)
Outside Fiction	5		2	7 (22%)
[*2 3rd graders didn't know]				
Chorus Dinos				
Actually Real	5	6	8	19 (59%)
Realistic	2	4	2	8 (25%)
Make-Believe	3	1	1	5
(because)				
Human	7	9	9	25 (78%)
Theatre Conventions	4	1	4	9 (28%)
Dino Realism	2	2	1	5
Emotions Felt:				
Inside Fiction	4	4	4	12 (38%)
Outside Fiction	4	5	6	15 (47%)
[2 1st, 2 3rd, and 1 5th grader did not know emotions &/or how they knew emotions were felt.]				
Bunk				
Actually Real	8	4	6	18 (56%)
Realistic	2	6	3	11 (34%)
Make-Believe		1	1	
(because)				
Human	6	6	4	16 (50%)
Social Realism	2	6	7	15 (47%)
Theatre Conventions	3		1	4
[1 5th grader did not know.]				

Responses to the chorus' emotions raise arguable questions about "videocy" in comparison to responses for the screen dinosaurs' emotions. Why would most children attribute *human character* emotions to *computerized* dinosaurs *within* the fictive story, but then go on to focus upon the *human* chorus *actors'* emotions *outside* the fiction in their performance modes? Did the context and subsequent sequencing of previous questions about the chorus' roles lead them to focus more on the actors' performance roles than on the humanized characters of dinosaurs they played? Were children led to think that the interviewers wanted to hear their knowledge of performance conventions? Were the five children who did not know chorus dinosaur emotions confused about not knowing the actors' actually felt emotions? If children's outside fiction attributions of the screen and chorus dinosaurs' emotions indicate a "videocy" variable, does this imply that the acknowledged pretense of actors' performative roles also constitutes "videocy" because audiences are focusing on the actors' performative conventions outside the fictive story?

Further comparative analysis reveals no apparent pattern, as the following table shows:

Table 7

Comparisons of Screen and Chorus Emotional Attributions

	1st	3rd	5th	Totals
Both Dinos Inside Fiction	3	4	2	9 (28%)
Screen Inside - Chorus Outside		4	5	9 (28%)
Screen Outside - Chorus Inside	1		2	3 (9%)
Both Dinos Outside Fiction	4		1	5 (15%)
[Don't Know Screen &/or Chorus	2	3	1	6 (19%)]

e. Bunk (the oil worker)

When asked to define Bunk's level of reality, nearly all children (90%) judged him to be an "actually real" (56%) or "realistic" (34%) person, based on his human traits (50%) and/or the actor's realistic portrayal of his character (47%). Similar to rationales above, third and fifth graders applied their media knowledge of fictional conventions by pointing out that, although "there are real oil workers and they do work in caves," he was "a fake oil person" or an "actor" "acting" "a make-believe part." Two children labeled him "make-believe" because "he was acting," and because "he had a plastic bag to put stuff in that didn't look much like something that a real person would do."

Three first grade girls perceived acting conventions by his costume or by noting that "He's faking it that he's scared of the dinosaurs." Two fifth grade boys thought he was "real because they do have oil diggers like that, and he might have actually wanted to protect the dinosaurs. He might actually like them in real life;" or, "realistic [because] there're like oil workers that have to find that [oil], but if you had set out *dynamite* by an *oil* thing, you'd have it spring up in your face . . . . He had a different feeling than everything else. . . . He's like scared [and] all very jumpy." Though not asked to identify his emotions, others also focused on "How he looked funny and scared;" and, "He talked like . . . he was scared when he [found] out about the dinosaurs, and he said that the dinosaurs were going to eat people."

Viewers' Attentions and Artists' Intentions

a. Attention

The majority of children (81%) (8 1st; 8 3rd; 10 5th) reported watching *both* the screen and chorus dinosaurs at the same time during the play. Only two third graders said they watched the screen dinosaurs more often for their taller size and movements or because "they were really neat looking [and] they did funny things." Four children (2 1st; 1 3rd; 1 5th) said they watched the chorus more often because they moved "weirdly," "much slower so I could see them," or "did different movements" than the screen dinosaurs, and "they were funny."

b. Screen Dinosaur Interest

When asked what made the screen dinosaurs "interesting to watch," most children (66%) described their physical appearances because they were "neat looking," "really colorful," "bigger," and "tall" with "long necks." Their movements, in particular, caught attentions in that "they was opening their mouth a bunch, " "they could fly," and "they flapped their wings." Interest was also captured by the fact that "you can see them much better," and that "you don't usually see that, on the screen there." Two children followed colors that matched each chorus member's costume:

> I watched them both to see like what colors the people would look like on the screen as dinosaurs and stuff. . . . [5th grade boy]
>
> . . . 'Cause see, . . . the blue parts are in blue so they both go together. [1st grade girl]

Two other girls (3rd and 5th grades) thought the screen dinosaurs "were 3-D."

Another major reason for watching the screen dinosaurs, especially for third and fifth graders, was that they "looked realistic" "more like real dinosaurs" "than the people did" (34%). As one fifth grade boy explained, "If that wasn't like the special effects, the people would've had to wear costumes and that wouldn't seem very real; and like, the projections in the back, they looked pretty real." Other reasons included watching them mimic the chorus by "doing the same thing as these people" (15%), hearing them make "sounds" or "noises" (6%), and enjoying the "funny things" they did (9%). As one fifth grade boy explained, "You don't really know when they're coming out, so you're watching the people and there's some giant, like ten-foot thing, going like 'Ooooh' {with monster inflection}."

c. Chorus Dinosaur Interest

Physical appearances (53%) were again the main reasons for watching the chorus because "they had some weird clothes on," which were colorful, bright, "tie-dyed," and "baggy [so] it makes them kinda look like their skin in a way." Here, fifth graders seemed attuned to the chorus' movements "like dinosaurs" because:

> They could move more than the dinosaurs on the screen could. [girl]
>
> They always squatted to be a mushroom or a rock, and they acted like they were playing dead and dying and like they were attacking each other and stuff. [boy]
>
> They were very funny looking with all hands all perched up on their [chests]. Besides, they don't have any shoes on. I think it'd be funny if one stubbed their toe and like fell off, 'ahh!' [boy]
>
> Well, sometimes if they, like, got into a fight, and they were like swinging their arms at each other . . . the special effects' dinosaurs weren't really doing anything. They were just kind of standing in front of each other. [boy]

First graders also watched the chorus' appearances because:

> They would come out and you could see the screen, 'cause then you would know that they were coming out. [girl]
>
> You can see much better, too, because they're acting like a show. [girl]
>
> I wanted to see both of them [because they were both] cool. [boy]

Watching the chorus "moving the same way" as the screen dinosaurs and "really acting them out" continued as another visual interest (28%), a reason which also made them "good actors." However, one third grader thought that "when the dinosaurs moved, they didn't move *exactly* like how the people moved." Some (25%) also liked "how they talked for the dinosaurs," "because they were growling at each other, and trying to scare the other ones away." One fifth grader appreciated how "They were acting it out and telling you what they're doing and what's happening and what's going on." Again, some interest was also engaged emotionally (12%) because "they look funny," and "they act silly. 'Cause the guy fell down in the sand and the dinosaur saved his life." Only one third and fifth grader each thought "It was cool to see real people on stage acting it out," because "They acted like a dinosaur."

In sum, most children (81%) watch both sets of dinosaurs primarily for their respective physical appearances, as the following table shows:

Table 8

Reasons for Screen Dinosaur Interest

	1st	3rd	5th	Totals*
Physical Appearances	8	5	8	21 (66%)
Physical Realism	1	6	4	11 (34%)
Mimicked Chorus	2	1	2	5 (15%)
Funny Emotional Quality	1	1	1	3 (9%)
Sounds			2	2 (6%)

Reasons for Chorus Dinosaur Interest

	1st	3rd	5th	Totals*
Physical Appearances	6	4	7	17 (53%)
Mimicked Screen Dinos	3	4	2	9 (28%)
Talked	1	4	3	8 (25%)
Emotional Quality	3		1	4
Perceived Reality		1	1	2

[*Overlapping categories result in % over 100%]

Inferring Artistic Intentions

When asked *why* they thought the artists "put the dinosaurs on the screen *and* the people on stage" and "what difference" it made, children provided five main (and overlapping) reasons:

1) to enhance *physical realism* by making the screen dinosaurs bigger and more *realistic-looking* because people don't look like dinosaurs (e.g., can't fly);

2) to indicate chorus members' identities by the *type* of dinosaur each played;

3) to allow the actors to *talk* for the dinosaur images on the screen;

4) to enhance the *audience's experience* (e.g., to see better and choose what you want to watch; to make it easier to pay attention and understand; and for more fun); and,

5) to retain the *medium of theatre* so people could act out the dinosaurs and copy (or control) the movements of the screen dinosaurs.

The following table summarizes the frequencies of these overlapping reasons:

Table 9

Artistic Intentions

	1st	3rd	5th	Totals
Physical Realism	3	5	5	13 (41%)
Types of Dinos		5	6	11 (34%)
Talking	4	1	3	8 (25%)
Audience Perspectives	3	2	5	10 (31%)
Theatre Medium	1	2	2	5 (15%)
Mimic Control	5	1		6 (19%)

[2 3rd & 1 5th grader did not know.]

Given that physical appearances were the most often cited reasons for watching both sets of dinosaurs, physical realism became an implicit and overarching artistic expectation (41%), which often overlapped with other categorical reasons. Given that the chorus didn't (and, apparently, couldn't) look like dinosaurs, the screen dinosaurs supplied crucial information about each chorus dinosaur's specific identity (34%) (apparently for third and fifth graders only):

> So we knew who was which dinosaur. [3rd grade Hispanic girl]
>
> [It made a difference] that we could really see what kind of dinosaurs they were at certain times, instead of just people. [5th grade girl]
>
> Probably so you could look at both of them so you could see what *kind* of dinosaur they were. [The screen dinosaurs] actually looked like the dinosaurs and they would *move* and . . . the people didn't really look like the dinosaurs. [3rd grade girl]

Two fifth grade girls had no idea what difference it made having the chorus on stage, but they knew that seeing "what kind of dinosaur they are" made it "a lot easier to understand" what the chorus was "doing" and "who these people are." Another fifth grade girl thought it was "A lot different . . . with the people doing it [because it was] *weird* that they were nice to each other" (unlike electronic media depictions?). Two fifth grade boys implied that they didn't want to imagine costumed actors as dinosaurs. So in addition to showing "what dinosaur they were," the artists supplied two sets of dinosaurs:

> So that it would give another look at things without [the audience] having to just *picture* what the dinosaurs would look like [without screen images]. 'Cause then it's easier to pay attention to the whole thing instead of having to stop and think. You can actually *see* it and then add a little more if you wanted. . . . I think it made it a better play than what I thought it would be like. I thought it would just be some people with long, long necks and they'd have on costumes and stuff.
>
> . . . It looked cool in the back [on screen] 'cause down there [on stage], it's just boring. Guys dressed up in weird-looking costumes.

Several children (25%), especially first graders, delighted in pointing out that, because the screen dinosaurs couldn't talk, live actors were needed to provide dialogue for them as another way to enhance realism. They didn't seem to consider that actors' voices could be supplied offstage, as in animated films, without their bodies needing to be on stage:

> It was interesting to watch them 'cause the [screen] dinosaurs weren't really talking. The people were talking and making them act like they were talking. [1st grade girl]

> 'Cause [the chorus] could talk normal and [the screen dinosaurs] couldn't. [1st grade boy]

> So they can talk [because] dinosaurs can't talk. They can [scream and yell]. But the real dinosaurs [i.e., the chorus] [are] supposed to talk like in their own way. [1st grade African-American boy]

Several children pointed out other reasons for showing two sets of dinosaurs by considering additional audience perspectives (31%) (e.g., viewing choices):

> So you can look at both if you want to [even though it was] confusing trying to look at both of them. . . . 'Cause all of the [chorus] people were in the way of the TV screen. [1st grade boy]

> To make it more realistic and so it'd be more fun. So if you liked people, then you could watch them. If you liked bigger [things], then you could watch [the screen dinosaurs]. . . . It was better than a play [because] it showed what the dinosaurs really looked like and it also showed them talking. [5th grade girl]

> So [audience members] in the back . . . could see the [bigger] dinosaurs [on the screen]. [3rd grade girl]

> So it would be more funner to watch. . . . [3rd grade girl]

> . . . It felt funny [due to] the way that they [the chorus] act. . . . They were kind of funny. 'Cause he (Dave in photo) would get scared by the light, and she (Becky in photo) would act funny. [1st grade girl]

> Because they want the people to know about dinosaurs. . . . [1st grade girl]

> . . . 'Cause it'd catch interest if both [sets of dinosaurs] are playing dead. And also so everybody would pay attention, 'cause when they were doing a very special part or something like, with helping the people [Bunk or Peek, who] weren't on the computer screen, you had to watch [the chorus]. . . . [It made a difference for] two points of interest. 'Cause one, you're watching [the chorus] act and do things and they can talk and roam around. But [the screen dinosaurs] can't move, besides going off the screen. [5th grade boy]

To answer these questions, a few children focused on the matching or mis-matching mimicry between the screen and chorus dinosaurs (19%). However, first graders assumed that the chorus was somehow controlling the screen dinosaurs' movements, so you couldn't have one set without the other:

> Because they wanted it to look like real dinosaurs. And they had to act it out, because . . . . if these people didn't come out and act it out, then these dinosaurs [couldn't get on and] wouldn't be on the screen moving. [African-American girl]
>
> So the people can play the dinosaurs, 'cause they act like people that had string and then the other people move them around. They act like that. [Native American girl]
>
> Because . . . the people had control of them . . . 'cause they had like a little cord on them. It controlled the [screen] dinosaur. [Euro-American girl]
>
> 'Cause you couldn't see [the screen dinosaurs] if these people weren't on stage. . . . [Euro-American girl]
>
> Because to act like it was the shadow. . . . That the people was moving much slower and the dinosaurs were moving much faster. [Asian-American boy]

One third grade African-American girl focused on the mimicry between both sets of dinosaurs which "made a lot of difference because the people were not *exactly* moving how the [screen] dinosaurs would move . . . ." She implied this was because the chorus "might not have learned all their actions" because they had only one more performance date to master their mimicry. Another third grade boy, who didn't know why there were two sets of dinosaurs, reasoned, "There was a person on the back of that machine and they were doing the dinosaur shape and when a person came up there, it would tell them and then they would flip on a switch by which one to do."

Only five, mostly older, children (15%) inferred that the reason for having both sets of dinosaurs represented was "So [the chorus] could act out [the dinosaurs], and you could see the [different types] so they wouldn't have to change clothes each time or something." This third grade girl then asked what many first graders had tried to figure out on their own: "Did they have to learn like to move each part with the dinosaurs, or did the dinosaurs like have a radiation that moved them?" The interviewer explained, "Actually, there was a person with a joystick moving the dinosaurs around." "So they were like paper or something?," she wondered. "They were computerized," answered the interviewer. One fifth grade girl, who reported focusing on the chorus' movements because they differed from the screen dinosaurs, reasoned that the artists simply wanted to show audiences "people acting out dinosaurs." Only three children, one in each grade, stated medium differences between film and theatre as their reasons:

> So it would be more than a movie, so it would tell kids, like instead of just having to just watch a movie, and not hear anything, you could have people talk. [1st grade girl]
>
> . . . . It wouldn't be an actual play if you didn't have people in it. . . . [But] I don't think it made a difference. It was kinda neat to have something in the background that moves with you. [3rd grade girl]
>
> If the people weren't down there acting, doing the same stuff as the dinosaurs, it wouldn't really be like a play. [And] if it was just the people, they wouldn't seem like dinosaurs. But if it was just the dinosaurs, it wouldn't be a play. It'd be more like a movie with just the dinosaurs. [5th grade boy]

This last child came closest to matching the artists' actual intentions.

In sum, most children inferred visual reasons for including both screen and human dinosaurs on stage, primarily to enhance the overall physical realism of dinosaur characters. Their responses captured more practical than artistic reasons for employing this theatrical convention from their audience perspectives.

Bunk's Final Actions - The Main Idea of Play

After asking respondents to define "the oil worker's" perceived reality in the play (discussed above), they were asked to describe what he did at the end of the play, what decision he made, how they knew he did and decided these actions, what he learned from the play, and how they knew he learned these main ideas. [Past studies have found that children infer a play's main idea best when asked what the protagonist learned (Klein, 1990).] These four questions were coded together in order to define two variables: 1) each respondent's most global or abstract main idea of the play, which applies to society at large, in contrast to specific, concrete actions culled only from inside the production; and, 2) visual and/or aural performance cues which indicated how children arrived at these main idea inferences. In many cases, both abstract and concrete main ideas were reported as well as one or more performance cues.

In order to grasp the play's main ideas, children needed to recall that Bunk purposely sealed off the cave's entrance with dynamite *so that* no one could ever return there and harm the dinosaurs again; thus, ironically, rendering them "extinct" once more. However, this crucial action occurs offstage. Past studies have found that young audiences tend to miss offstage actions, *unless* they pay attention to dialogue and/or sound effects (Klein, 1987, 1989, 1990). In the present case, children needed to recall hearing the sound of an explosion, seeing a painted wall of rocks close the cave entrance, and/or hearing the Narrators' dialogue: "Set a little dynamite charge off--(sound of a rumble and crash; wall comes down)--blew off a little avalanche. Not much; just enough to cover the entrance to the land of the dinosaurs. *(He) Never saw the place again*" (30) (my emphasis added). (The director or actor added the word "he.") However, the text and the director's staging confuses the issue of whether Bunk actually leaves the cave forever, as stated by the Narrator above, *OR* returns again to visit his dinosaur friends. In the final moments of the play, a Narrator states: "There's a place down below where the dinosaurs dance and dance and dance *at least till the nonecks find them again*" (31) (my emphasis added). At this point, the director had Bunk return to the stage, from the opposite side of where he had exited the cave's entrance, to join the dinosaurs and deliver the Narrator's lines himself: "But there's only one man alive *who knows his (the) way down*. 'Cause my little partner, she never found her way back. *And as for me, well, I'm not telling*" (31) (my emphasis added). The visual fact that Bunk stands with and embraces the dinosaurs during these lines implies that he found his way back down through a different path in order to visit the dinosaurs again--and *reverses* the Narrator's earlier lines about Bunk never returning again.

For all these reasons, together with the fact that children's memories were challenged by being interviewed four days after attending the performance, interpretations of the play's main ideas varied considerably based, in part, on which of Bunk's final actions children recalled. Only 13 children (41%) (3 1st; 4 3rd; 6 5th) recalled that Bunk blew up the cave's entrance or that "it got blocked off" when "the rocks fell down;" 5 of whom (16%) (1 1st; 4 5th) also recalled the Narrator's dialogue to this effect ($r = .52, p < .001$). Yet remembering this climatic action led only 7 of these children (22%) (1 1st; 2 3rd; 4 5th) to fully grasp his motive--*so that no one, including Bunk himself, could return to the cave and harm the dinosaurs again* ($r = .39, p < .01$). Only 14 children (44%) (2 1st; 6 3rd; 6 5th) recalled Bunk's onstage action (just before he exited to blow up the cave); that is, he took the camera away from Peek and/or destroyed the film. However, only 7 of these children (22%) (2 3rd; 5 5th), including 3 (1 3rd; 5th) who also recalled the cave explosion, concluded that he did this *so that no one would return to the cave* (with no significant relationship). In addition, 9 children (28%) (2 1st; 5 3rd; 2 5th) recalled Bunk's secret about not telling anyone about the dinosaurs in the cave. But, again, only 4 of these children (2 3rd; 1 5th) used his final narration to infer the consequences of his actions. Interestingly, 7 children also grasped Bunk's arc (a testament to the actor's performance)--that, at first, he was afraid of the dinosaurs, and then he realized they were nice and not mean, because one dinosaur had saved his life (11 children).

In sum then, recalling these visual and/or verbal actions led only 12 children (37%) (1 1st; 3 3rd; 8 5th) to realize the *consequential effect* of Bunk's *motives* for final actions; that is, that he *saved the dinosaurs' lives from actual extinction*, as the following responses demonstrate:

> . . . He put, you know the rocks that he opened, he put them down. [So what did he decide to do?] Let the dinosaurs live and put it down. 'Cause she wanted to film them and kill them. [How do you know?] Because he didn't want the dinosaurs to die. . . . [What did he learn?] He learned that he should respect animals. [How do you know?] Because he decided to get out so the people do not come back in there. [1st grade girl]
>
> He put another, I think it's an explosure [sic] . . . and then he made a whole bunch of rocks come down just to fill up that one space so that no one could bother them anymore. [What did he decide to do?] He didn't want the girl to go back in there because she kept on scaring them off with the camera, so he took [it] over there and he threw the film out. . . . [What did he learn?] Probably not to mess with dinosaurs and not to be afraid of them. And they're just as afraid of you as you are to them. [How do you know?] Because it looked like he was learning things and he actually *looked* like he was learning them. [3rd grade girl; her emphasis]
>
> . . . [What did he decide to do at the end?] Oh, he decided to blow up the entrance so the other lady couldn't get back in and make it so people wouldn't come down there and mess with the dinosaurs. [How do you know?] Because we saw rocks come down . . . at the entrance, and also right after he did all that he came back out on stage and told us about that stuff. [What did he learn?] Leave the earth alone. I don't know. I think that's the best I can say, without thinking a whole lot about it. [How do you know?] By what I saw in the play. [3rd grade boy]
>
> He took the camera so the dinosaurs wouldn't die from people destroying their cave. [What did he decide to do?] Just leave and don't tell anybody about it. [How do you know?] Because he kinda said it and that's what he did. [What did he learn?] That dinosaurs can be nice, and that dinosaurs will die if people destroy--come in and take over the cave. [How do you know?] Well, he told the girl, sort of like that. [3rd grade girl]
>
> [What did he do at the end?] He blew a dynamite up, that way nobody else would go in there, because they were hurting--that one lady was taking all the pictures and hurting them, and that he was also hurting them by drinking the water and making it poison and stuff. . . . [How did you know that he blew up the dynamite at the end?] 'Cause it [a

narrator] said so. That then he blew up the dynamite and his partner and them never found it again. [What did he learn?] . . . That dinosaurs aren't scary. . . . [How do you know?] Because the dinosaur came up to him and talked to him and then he tried to save them when the lady took the pictures. [5th grade girl]

He sealed up the tunnel so people couldn't go in there and bother the dinosaurs. [How do you know?] . . . It [a narrator] said that he did that and the little hole that they came through closed up. [What did he learn?] . . . That there's kind of like a secret between him and the other oil worker that they shouldn't go off and like tell everybody. [How do you know?] 'Cause at the end of the play, he said--well, I'm not sure if this is his exact words, but he said, 'Well, I don't want the dinosaurs to be taken and, be like taken out of where they live and put in zoos and stuff.' [5th grade boy]

He threw away the film and he closed up the hole so his partner wouldn't be able to find the way back in. [How do you know?] Because it showed it and the Narrator was also talking. [What did he learn?] That money wasn't more important than like somebody's life. [How do you know?] I'm not sure. [5th grade girl]

He blew up the entrance with dynamite so they would save the dinosaurs and keep his partner from finding them and hurting their lives like that. [How do you know?] 'Cause they showed him walk out that entrance and then they showed a boom and then the big door thing slid down and slammed shut. [What did he learn?] I think that I [sic] learned that you should respect other people or animals and not just try to barge into their area and their lifestyle because they might not like that and they might go away or die because of it. [How do you know he learned that?] . . . I think he just wanted to save them since it was the last of their kind and there might not be any more afterwards. I think they *could* probably bring back some dinosaurs if they found DNA. . . . [How do you know he wanted to save them?] Because of the way he acted around them. He was kind of scared, but then he destroyed the camera film and he closed the entrance so that no one would be able to hurt them. [5th grade boy; his emphasis]

He found out that the dinosaurs weren't going to hurt him, because one dinosaur saved him from getting in quicksand. So he tried to protect them from his one partner, from scaring them off and stuff, and from people exploring there. [How do you know?] Because he took his partner's camera away, because she's taking pictures of the big, big dinosaur and it scared the big dinosaur because he thought he used fire against him. [How else did you know that he decided to do that?] Because that one dinosaur helped him, or saved his life. [What did he learn?] He probably learned that dinosaurs weren't all that bad. [What else?] That some of them are extinct because of the people and animals that were living there. [How do you know?] . . . When he talked, he was all like, '*No*, don't do this to the dinosaurs' {with expression}. And then he saw the one dinosaur that saved him, and she was taking pictures and stuff, and it kind of scared him off. [5th grade girl]

> He decided to take out the film on the camera because he didn't want nobody else to find the cave. . . . [What did he learn?] That you should trust dinosaurs. [How do you know?] Because of when he was about to step in that quicksand, the dinosaur said, 'Don't, there's quicksand in there.' [5th grade girl]

> He tried to help the dinosaurs out, by trying to get the lady to leave, because they were invading their space. [How do you know?] . . . He took the camera away from her. [What did he learn?] That some dinosaurs weren't that bad. They're not as bad as they sound. [How do you know?] 'Cause at the beginning of the movie [sic] he was all scared of them. And . . . at the end of the play, he wasn't so scared. He was trying to help them out. [5th grade girl]

> He saved the dinosaurs and blocked off the entrance so his friend couldn't come back and kill them. [How do you know?] Because it showed it. [What did Bunk learn?] I don't know. I haven't the slightest clue. [5th grade boy]

Similar to responses above, the following 9 children (28%) (3 in each grade) recalled Bunk's decision to help the dinosaurs, but *without* fully grasping the consequential import of ensuring that no one, including himself, would ever return to the cave:

> He [stood] there, 'cause he wanted the dinosaurs to stay alive forever. [So what did he do?] . . . He hugged them; he pulled one of the T-Rex arm up and then just dropped it on the ground. [And what did he do after that?] Then when the girl that was helping him discover the dinosaurs, she said, 'Come on,' and went back to Washington. [Then what did he do?] Then they went back into the Washington and then . . . [the dinosaurs] got up and say, 'Yay! The no-necks are gone!' {with expression}. [How do you know?] Because that was only the way, 'cause the humans don't know when they were playing dead. [What did he learn?] Not to mess with their water. [How do you know?] 'Cause he poisoned their water. [How do you know?] 'Cause we have oil on our skin. And if they drink and it can make them get sick and die. [1st grade girl]

> . . . He threw the camera down. He took the film out and then threw the camera down. [How do you know he decided to do that?] Because he liked the dinosaurs then. 'Cause they was real good to him and the girl took pictures of the dinosaurs, and that made them go away. He didn't want [the dinosaurs] to go away 'cause they were so nice. And one of them saved him. [What did he learn?] That the dinosaurs was nice, and to not take pictures of dinosaurs 'cause they'll come up to you. . . . [1st grade girl]

> . . . [Do you remember what he decided to do at the end?] To help the dinosaurs. [How did he decide to help them?] Leave them alone. [So what did he do to leave them alone?] I can't remember. [How do you know he decided to help them by leaving them alone?]

Because the dinosaurs didn't want to mess with them. [What did he learn?] I can't remember that much. [1st grade boy]

He left and it got blocked off. . . . [What did he decide to do at the end?] Just leave [the dinosaurs] alone. [How do you know?] Probably because he thought that he *was* going to kill them off. [What did he learn?] I don't know that one. [3rd grade girl; her emphasis]

. . . Oh, he took out the film of the camera and threw it 'cause they were kind of killing the dinosaurs. [How do you know?] 'Cause I watched it in the play. [What did he learn?] . . . I don't know. [3rd grade girl]

. . . [What did he decide to do?] Leave a trail. So they can come back, but the girl never found the trail, but he did, so he didn't tell her. [How do you know?] Because he dropped the camera and the little flashlight. [What did he learn?] That the dinosaurs saved his life so he shouldn't be afraid of them. Now that they're extinct, that he should learn to like stay off their property or something might happen. [How do you know?] Of the way the dinosaurs were talking to each other and moving and how the people talked to tell us what [the dinosaurs] said and stuff. [3rd grade girl]

He tried helping the dinosaurs. [How do you know?] Because he took the camera away from her so that she couldn't scare them anymore. [What did he learn?] Everybody probably has feelings. [How do you know?] Because he was being nice to [the dinosaurs]. [5th grade girl]

He blew up the entrance with dynamite. [How do you know?] Because it made a big old boom and some of the people [narrators] were saying that he sealed the cave up. [What did he learn?] There might be dinosaurs alive. . . . [How do you know?] Because actually he didn't *believe* in dinosaurs. [5th grade boy; his emphasis]

He memorized the way down in the cave, so he can like spend time with them, like he wouldn't tell, 'cause his partner wanted to ship them off to Washington, D.C. or some institute. [How do you know?] . . . I think he said something like . . . 'She wants to ship you off to D.C. How are we putting you on a cargo plane?' And he also said, 'And me, I'm not telling' at the end of the play {with deeper inflection, though not same as actor}. [So that's how you knew he memorized the way in the back?] Uh-huh {yes}. . . . [What did he learn?] . . . Actually, at first he was very scared and he hated the dinosaurs. But *then* he started to like them because one saved him . . . . And at the end, he's like, 'I'm not gonna let her ship you off. I'm not telling her where you are' {with character inflections}. [5th grade boy]

Similar to the latter response above, 6 children (19%) (3 1st; 3 3rd) concluded that Bunk returned to the cave to stay with his dinosaur friends, without grasping how his final actions or decisions affected the dinosaurs' future lives:

> . . . At the end of the play, he came back, but his partner couldn't find him, the way to come back in. [How come?] 'Cause there was an avalanche and he found another way. . . . [How do you know there was an avalanche?] 'Cause this little thing of rocks came down . . . and this guy [narrator] talked and told us that there was an avalanche and that he could only find his way back but his partner couldn't. . . . [What made the rocks fall down?] I don't know. It was just a big cave and then the ground started to shake. . . . [What did he learn?] He learned that he shouldn't be so close to dinosaurs. [How do you know?] Because he got scared of them at first, and then one saved his life, and then he was trying to say thank you, but they were scared of him. [1st grade girl]
>
> . . . [Do you remember what he decided to do?] Come back. [How do you know?] Because he knew the way up and down. And getting in to and to get out. And one of the dinosaurs are his friend. One of the dinosaurs saved him. . . . [What did he learn?] He was a good actor, good player. [What did he learn about the dinosaurs at the end?] They were nice. [How did he learn that?] He seen them too many times. His brain was full of them, and that's how. . . . Then they [be]came friends. [1st grade boy]
>
> Go in there where, before the rocks went down, that he went in there. [How did the rocks go down?] Something fell and the rocks fell down. . . . [What did he decide to do?] Stay there. [How do you know?] To see the dinosaurs again. [What did he learn?] I don't know. [Did you learn anything from the play?] Unuh . . . I don't remember. [1st grade boy]
>
> He didn't want to leave the dinosaurs and . . . he really cared about the dinosaurs because they saved his life. . . . [What did he learn?] That dinosaurs became extinct. [How do you know?] How the light made the dinosaurs die. [3rd grade girl]
>
> He helped the dinosaurs. [How do you know?] Because she was wanting to go get pictures and come back, and so they could like that, you know, and the dinosaurs didn't like it and he knew that, and so he cut off this thing [the cave entrance] and only a special way that he could come in, or something like that, or she could go off. [What did he cut off?] The way in. [What did he learn?] That dinosaurs are still alive, kind of. [How do you know?] Because he thought they were dead and then he saw them. [3rd grade girl]
>
> Well, he threw the camera down and he took the film out and threw it away . . . and he also came back into the cave and joined the dinosaurs. And not telling the scientists about [the dinosaurs]. [How do you know?] 'Cause one of the dinosaurs saved him and the camera was scaring the dinosaurs 'cause they thought they're using fire. . . . [What did he learn?] I don't know. Probably science. . . . History and about the dinosaurs and how they were in the land. [How do you know?] Well, I don't know. Probably a person was saying it. {yawns} [3rd grade boy]

The remaining 5 children (16%) (3 1st; 2 3rd) concluded only that Bunk learned something about dinosaurs in general--from actions that occured earlier in the play:

> He took the camera from the girl because she was scaring the dinosaurs away. . . . [What did he learn?] That all dinosaurs are not always mean and they won't eat you. [How do you know?] 'Cause before, he was scared that they were going to eat him, and that sort of the end, he started to get used to them and he didn't think that the dinosaurs were going to eat him. [3rd grade girl]
>
> I can't remember. . . . He learned probably that dinosaurs aren't always gonna harm you. They might help you like pulling you out of quicksand. [How do you know?] Just the way that he acted and the way that he was scared of them at first and then he wasn't so scared of them at the end. [3rd grade girl]
>
> He figured out that he liked the dinosaurs 'cause one of the dinosaurs saved him. . . . [After the dinosaur saved him, what did he decide to do?] Someone kept taking pictures and then that made the dinosaurs go away so, and he's like, 'Don't do that! Don't do that! One of the dinosaurs saved me!' {with expression} [And what happened after that?] The dinosaurs went away. [And then what did *he* do?] He's like, 'I'm going to take this camera away from you! {with expression}. [What did he do with it at the end?] He pulled it, pulled the string out and then throws it on the floor. And then he went up there and the movie [sic] was over. . . . [1st grade girl]
>
> He stood on stage and he bowed. [Before he bowed, what did he do in the story?] I forgot. [What did he decide?] He decided that the dinosaurs was nice. [How do you know?] They played with each other, and they was funny and stuff. [What did he learn?] He learned that the dinosaurs was all extinct and they was no more dinosaurs. [But there were dinosaurs there.] Oh. He knew that the dinosaurs was nice. [1st grade girl]
>
> I can't remember. . . . He learned about dinosaurs. [What did he learn about them?] I can't remember it. . . . [1st grade boy]

Further statistical analyses affirmed significant relationships among these variables. Fifth graders were more likely to conclude that Bunk never returned to the cave in order to save the dinosaurs' lives from extinction ($r = .58, p < .0001$), especially if they recalled that he blew up the cave's entrance ($r = .39, p < .01$). In contrast, first graders were more likely to believe that he returned to stay with his dinosaur friends ($r = -.36, p < .02$), probably because his visual return to the stage was more memorable than the Narrator's dialogue (i.e., that he never returned). Those who recalled that he took and/or destroyed Peek's camera [girls more than boys ($r = .37, p < .02$)] were less likely to recall the offstage cave explosion ($r = -.35, p < .03$) and less likely to conclude that he stayed with the dinosaurs ($r = -.32, p < .04$). On the other hand, those who recalled his secret (e.g., "I'm not telling") took his narration to mean that stayed with the dinosaurs ($r = .48, p < .003$), and they were more likely to believe that he stayed with the dinosaurs if they remembered that a dinosaur had saved his life ($r = .36, p < .02$). Yet those who emphasized that a dinosaur saved his life were far less likely to recall that he blew up the cave ($r = -.47, p < .004$), and therefore, they did not conclude that Bunk saved the dinosaurs' lives in return ($r = -.31, p < .04$). The following table summarizes the content of responses at a glance:

Table 10

Bunk's Final Actions	1st	3rd	5th	Totals
Visual Cues:				
Blew up cave entrance	2	3	6	13 (41%)
(blocked/rocks fell	1	1)		
Destroyed film; threw camera	1	4	3	14 (44%)
(Took Peek's camera away	1	2	3)	
Stayed with dinos	5	4	1	10 (31%)
Aural Cues:				
Narrator told "avalanche"	1		4	5 (16%)
Bunk's secret	2	5	2	9 (28%)
Aural and Visual Cues:				
Bunk's arc	1	2	4	7 (22%)
Dino saved him	4	4	3	11 (34%)
[2 1st graders didn't know]				

Consequences (Bunk Learned)	1st	3rd	5th	Totals
So no one returns to cave:	1	3	8	12 (37%)
Decided to help/save dinos	3	3	3	9 (28%)
Stayed with dinos only	3	3		6 (19%)
Learned dinos are nice only	3	2		5 (16%)

Summary of Findings with Correlational Results

The majority of children (84%) reported that peers would enjoy this play "a lot," with personal motives for viewing divided between entertainment (38%) and learning (44%) or both (13%). Most (88%) rated the play as "real easy" (28%) or "sort of easy" (59%) to understand, primarily because the video screen showed visual information (38%), especially which type of dinosaur each chorus member portrayed. Additional attributed reasons included how the chorus acted out or told about the dinosaurs (22%), aural/verbal clarity (i.e., speed, volume, vocabulary) (28%), and the script's content or fictional premise (19%). Younger children reported watching the play "to learn something" ($r = .43, p <.007$) and thereby found the play harder to understand more than older children ($r = .37, p <.02$) ($r = .34, p <.03$).

All 32 children appeared to know that dinosaurs are extinct, despite their sometimes shaky knowledge about the actual meaning of the term "extinction," with boys providing more accurate reasons for their extinction than girls ($r = -.30, p <.05$). With few exceptions, they understood that the play was a fictional account about factually extinct dinosaurs. Those who stated more knowledge about dinosaurs tended to rate higher peer enjoyment of the play ($r = .32, p <.04$).

Most children had seen a dinosaur movie (72%) and/or television program (66%), while fewer had played a dinosaur video or computer game (31%; 5 girls, 5 boys) or seen a dinosaur puppet show (16%). Boys more than girls ($r = -.32, p <.04$) perceived that these four media differed from the play primarily in terms of form (61%) more than content (39%) ($r = .56, p <.002$). Younger children tended to glean their knowledge about dinosaurs from media depictions more than older children ($r = -.34, p < .03$). Those with more electronic media experience cited far more formal differences from the play ($r = .63, p < .0001$) and more content differences with the play's script ($r = .47, p < .004$), and they also tended to focus on the mimicry between both sets of dinosaurs ($r = .30, p < .05$) and less on physical realism ($r = -.35, p < .03$). Those who mentioned more formal differences between the play and electronic media focused on this mimicry most ($r = .62, p < .001$), as well as viewing contexts ($r = .51, p < .01$) and the chorus dinosaurs' emotions inside the fiction ($r = .47, p < .003$).

Regardless of their familiarity with dinosaur media depictions, most children (84%) chose electronic media as the best form for depicting a "real life" dinosaur story because movies, television, and electronic games have the technological ability to heighten "real life" with bigger movements and more realistic, visual appearances. *Apparently, whether "real life" happens live in person or as a recorded event makes little difference.* Only 3 girls (1 3rd; 2 5th) recognized that the inclusion of live people in a school play distinguishes "real life" from electronically mediated media. (If these girls had considered that human beings weren't around during the time of dinosaurs, then using live actors in a play would be a moot medium choice.) Over half (59%) perceived that the play looked more like theatre (47%) or a puppet show (12%), primarily because actors (who seemed like puppets in four instances) acted out the dinosaur characters in "pajama" costumes. The remaining 41% perceived the play was more like electronic media by calling attention to the screen with its bigger, moving, and more "real" dinosaurs.

Most children (75%) attended to the screen dinosaurs' physical activities, while the few (22%) who reported the play's fictive actions or superobjectives indicates that their consciousnesses were not distracted by the screen's "videocy." Interestingly, four boys were more likely than two girls to mention that the screen dinosaurs could talk ($r = -.35, p < .03$) as they also focused on the chorus dinosaurs' physical appearances ($r = .33, p < .03$). Older children tended to focus on the screen more than younger children ($r = .30, p < .05$).

Most (88%) recognized that chorus members played objects and/or human narrators (in addition to playing different dinosaurs), primarily by watching changes in the screen's imagery (47%), actor behaviors (31%), or both (18%). Those who focused most on the mimicry between the two sets of dinosaurs focused less on physical realism ($r = -.33, p < .03$) and more on the chorus dinosaurs' emotions within the fiction ($r = .48, p < .003$), with a bit more electronic media experience ($r = .30, p < .05$). Those who focused most on the chorus' acting appeared less concerned about physical realism ($r = -.36, p < .02$). There was a moderate relationship between attention to the physical appearances of both the screen and chorus dinosaurs ($r = .35, p < .02$).

Most first graders perceived the screen dinosaurs as "make-believe" ($r = -.51, p < .002$) because they existed as electronic media on a screen, while older children perceived them as looking "realistic" ($r = .53, p < .001$) largely by their physical appearances or behaviors. Although they defined the screen dinosaurs as "make-believe" or pictorially "realistic," most (72%) nevertheless ascribed human emotions to these computerized images by attributing various, mostly negative affects (i.e., sad, scared, mad, upset, worried) to main conflicts against Peek and Bunk from within the fictive context of the play. In other words, they fused both sets of dinosaurs as one fictionalized entity by anthropomorphizing the screen images and projecting the chorus' physical and vocal behaviors onto the screen, just as the director and scenographer had hoped. These projections of human emotional expression onto computerized images suggest that viewers' consciousnesses were *not* dominated by theatrical "videocy," as hypothesized. In fact, those who inferred the screen dinosaurs' emotions from within the fiction also watched this "real easy" play for fun (respectively, $r = -.34, p < .03$; $r = -.34, p < .03$). Only five children (4 1st; 1

5th) recognized the inability of screen pictures to feel any human emotion without "people acting them."

Most children (84%) perceived the dinosaur chorus as "actually real" (59%) or "realistic" (25%) human actors with human traits (78%) by acknowledging the basic theatrical convention that these people were acting like dinosaurs as realistically as is humanly possible, according to implicit rules of realism. It appears they "understood" that humans could not be realistically costumed as dinosaurs, given their physical limitations. While there were no significant relationships between screen and chorus dinosaur reality labels, those who focused most on their physical appearances tended not to label them "actually real" ($r = -42, p < .01$).

Despite the chorus' recognized humanity, no child noted their capacities for human emotion--until directly and subsequently questioned. Yet here they divided their attributions for the chorus' emotions between character emotions (38%) inside the fiction (16%; 4 1st, 1 3rd) using actors' performance cues (22%; 3 3rd, 4 5th) or actors' emotions outside the fictive story (47%; 4 1st, 5 3rd, 6 5th). Younger children were more likely to infer their emotions inside the fiction than older children ($r = -.41, p < .01$), while watching this "harder" play to learn something (respectively, $r = .32, p < .035$; $r = .44, p < .01$); and fifth graders were more likely than others to infer the actors' emotions inside the performance ($r = .35, p < .02$). If fact, the three girls who thought this fictional story would look more like "a school play" inferred the chorus' emotions outside the fiction ($r = .34, p < .03$) and focused less on the screen dinosaurs' physical appearances ($r = -.43, p < .007$). In contrast, those 15 children who thought the story *and* play looked like electronic media were *less* likely to infer the screen dinosaurs' emotions from inside ($r = -.45, p < .005$) than outside the fiction ($r = .33, p < .04$), as well as more likely to focus on their physical appearances ($r = .45, p < .005$).

Responses to the chorus' emotions raise arguable questions about "videocy" in comparison to responses for the screen dinosaurs' emotions. Why would most children attribute ***human character*** emotions to ***computerized*** dinosaurs ***within*** the fictive story, but then go on to focus upon the ***human*** chorus ***actors'*** emotions ***outside*** the fiction in their performance modes? Did the context and subsequent sequencing of previous questions about the chorus' roles lead them to focus more on the actors' performance roles than on the humanized characters of dinosaurs they played? Were children led to think that the interviewers wanted to hear their knowledge of performance conventions? Were the five children who did not know chorus dinosaur emotions confused about not knowing the actors' actually felt emotions? If children's outside fiction attributions of the screen and chorus dinosaurs' emotions indicate a "videocy" variable, does this imply that the acknowledged pretense of actors' performative roles also constitutes "videocy" because audiences are focusing on the actors' performative conventions outside the fictive story? The lack of significant correlations with the following, remaining variables indicates that "videocy" was not a determining factor in processing the play.

Most children (81%) reported watching both sets of dinosaurs for their respective physical appearances (66% and 53%), with no significant correlations with either set of physical appearances or inferences for the play's main idea. However, those who reported watching both sets tended to focus on the screen ($r = .34, p < .03$), as well as dialogue ($r = .31, p < .04$) and mimicry ($r = .34, p < .03$), to discern dinosaur types ($r = .32, p < .04$); and, they knew why dinosaurs were extinct ($r = .60, p < .0001$).

Inferred reasons for including both screen and human dinosaurs on stage indicated more practical than artistic purposes for employing this theatrical convention from their audience perspectives:

1) to enhance ***physical realism*** by making the screen dinosaurs bigger and more ***realistic-looking*** because people don't look like dinosaurs (e.g., can't fly) (41%);

2) to indicate chorus members' identities by the *type* of dinosaur each played (34%) [older more than younger children ($r = .50, p < .002$);

3) to allow the actors to *talk* for the dinosaur images on the screen (25%);

4) to enhance the *audience's experience* (e.g., to see better and choose what you want to watch; to make it easier to pay attention and understand; and for more fun) (31%);

5) to retain the *medium of theatre* so people could act out the dinosaurs (15%); in order

6) to copy (or control) the movements of the screen dinosaurs (19%).

"Theatre kids" were defined as those who inferred the retention of the theatre medium (above) and those who thought the story and/or play looked like "a school play" (or puppet show). These (3) children were more likely to recognize the screen dinosaurs' emotions from within the fiction ($r = .42, p < .01$) and less likely to focus on their physical appearances ($r = -.36, p < .02$).

Nearly all children (90%) judged Bunk, the oil worker, to be an "actually real" (56%) or "realistic" (34%) person, based on his human traits (50%) and/or the actor's realistic portrayal of his character (47%). Those who found him "actually real" also tended to label the chorus dinosaurs "actually real" as well ($r = .42, p < .01$) and less "realistic" ($r = -.36, p < .02$), while labeling the screen dinosaurs as more "make-believe" ($r = .31, p < .04$) than "realistic" ($r = -.36, p < .02$). Those who perceived him as "realistic" also tended to label the chorus as "realistic" ($r = .49, p < .002$) and not "actually real" ($r = -.47, p < .003$).

As already demonstrated above, younger children tended to label characters as "make-believe" ($r = -.49, p < .02$) while focusing on chorus members "acting out" the screen dinosaurs ($r = .31, p < .04$). Older children were more likely to perceive characters as "realistic" ($r = .35, p < .02$) while focusing less on acting conventions ($r = -.32, p < .04$) and more on mimicry ($r = .30, p < .05$). Those who focused most on this mimicry were less likely to label characters as "actually real" ($r = -.43, p < .01$).

Incomplete recall of Bunk's final actions affected interpretations of the play's main idea. Less than half of all children recalled that he blew up the cave's entrance (41%), his final, offstage action; 5 of whom (16%) also recalled the Narrator's dialogue to this effect ($r = .52, p < .001$). Yet remembering this climatic action led only 7 of these children (22%) to fully grasp his motive--so that no one, including himself, could return to the cave and harm the dinosaurs ($r = .39, p < .01$). Likewise, only 44% of the children recalled that he took Peek's camera away from her and/or destroyed the film onstage, just before exiting to blow up the cave. Yet only 22% of these children concluded the similar consequential effect of this action (with no significant relationship). Fewer (28%) recalled his narrated secret about not telling anyone about the dinosaurs in the cave, but again, fewer still (12%) used this narration to infer the consequences of his actions. Some children (22%) emphasized Bunk's arc (a testament to the actor's performance)--that, at first, he was afraid of the dinosaurs before realizing they were nice and not mean--because they (34%) remembered that one dinosaur had saved his life.

Recalling these visual and/or verbal actions led 66% of the children to conclude that Bunk left the dinosaurs alone, thereby saving their lives, ironically, from actual extinction. Yet only 37% of these children, primarily fifth graders, grasped that the consequences of his actions ensured that no one, *including Bunk himself*, would ever return to the cave ($r = .58, p < .0001$), especially if they recalled that he blew up the cave's entrance ($r = .39, p < .01$). In contrast, first graders were more likely to believe that he returned to stay with his dinosaur friends ($r = -.36, p < .02$), probably because his visual return to the stage was more memorable than the Narrator's dialogue (i.e., that he never returned). Thus, the remaining 34% of the children concluded either that Bunk stayed with the dinosaurs or that he simply learned they were nice. Those who recalled that he took and/or destroyed Peek's camera [girls more than boys ($r = .37, p < .02$)] were less likely to recall the offstage cave explosion ($r = -.35, p < .03$) and less likely to conclude that he stayed with the dinosaurs ($r = -.32, p < .04$). On the other hand, those who recalled his secret (e.g., "I'm not telling") took his narration to mean that stayed with the dinosaurs ($r = .48, p < .003$), and they were more likely to believe that he stayed with the dinosaurs if they remembered that a dinosaur had saved his life ($r = .36, p < .02$). Yet those who emphasized that a dinosaur saved his life were far less likely to recall that he blew up the cave ($r = -.47, p < .004$), and therefore, they did not conclude that Bunk saved the dinosaurs' lives in return ($r = -.31, p < .04$).

Inferring that Bunk saved the dinosaurs' lives, the play's main idea, had no significant relationship with videocy variables, other than those fifth graders who highlighted the chorus actors' emotions inside the performance ($r = .38, p < .015$). Although 15 children (47%), who thought the story would look like electronic media *and* who thought the play looked electronic, were less likely to infer the screen dinosaurs' emotions inside the fiction ($r = -.45, p < .005$), this significance was erased when these two social and physical realism variables were separated.

Discrete variables were further aggregated into: 1) inside production cues (i.e., visual and verbal cues, including physical appearances, acting, mimicry, and narration); 2) inside fiction (including the play's main idea); 3) outside production knowledge (including perceived reality, as well as dinosaur and media knowledge); and, 4) videocy variables (see Coding Methods in Appendix). Again, first graders tended to classify the screen and chorus dinosaurs as "make-believe" ($r = -.49, p < .002$), while fifth graders were more likely to define them as "realistic" ($r = .35, p < .02$), with no other significant age differences among aggregated variables. Those who rated the play with high peer enjoyment tended to label the dinosaurs as "realistic" ($r = .36, p < .02$), while those who gave it low peer enjoyment ratings were more likely to define the dinosaurs as "actually real" ($r = -.41, p < .01$). Boys tended to rely on more outside production knowledge than girls ($r = -.36, p < .02$), with no other significant sex differences.

Those who attended to more visual cues were more likely to grasp the play's main idea ($r = .31, p < .04$) while watching the play "for fun" ($r = -30, p < .05$); yet less likely to process the screen and chorus dinosaurs' emotions from inside the fiction ($r = -44, p < .01$). Those who focused on more verbal cues also relied on more outside production knowledge ($r = .41, p < .01$); while those who focused most on different aural and visual cues (e.g., acting, mimicry, and Bunk's arc) tended to have more dinosaur media knowledge ($r = .37, p < .02$) and were less likely to label both dinosaur sets as "actually real" ($r = -.38, p < .02$). The more children applied their outside production knowledge ($r = .36, p < .02$), particularly about dinosaur media ($r = .36, p < .02$), the more they also relied on inside production cues (i.e., all visual and verbal cues), and they were somewhat less likely to label dinosaurs as "actually real" ($r = -.36, p < .02$).

Those with more knowledge about dinosaurs tended to watch the screen most often ($r = .38, p < .015$) by relying on inside production cues ($r = .33, p < .03$), especially verbal cues ($r = .31, p < .045$); and they were slightly, but not significantly, less likely to process dinosaurs' emotions inside the fiction ($r = -.29, p < .057$). Those who relied on outside production knowledge most were more likely to classify the dinosaurs as "realistic" ($r = .44, p < .01$), especially if applying their dinosaur media knowledge ($r = .34, p < .03$), and to rate the play "real easy" to understand ($r = -.39, p < .01$).

In regard to potential videocy variables, those 27 children (84%) who thought this fictional story would look more like electronic media than theatre also tended to focus more on the physical appearances of the screen dinosaurs ($r = .37, p < .02$). There were no significant relationships with the 19 children who thought the play looked like theatre/puppetry and the 13 children who thought the play looked like electronic media. Those who perceived that the story and play looked electronic tended to label both sets of dinosaurs "realistic" ($r = .32, p < .04$). The three girls (1 3rd; 2 5th) who thought the story would look like theatre tended to process the chorus' emotions outside the fiction ($r = .40, p < .01$). Two children (1 1st; 1 5th) who labeled both the screen and chorus dinosaurs "actually real" also reported watching both with more screen mentions while perceiving that the play looked electronic ($r = .67, p < .01$). Frequencies between these social and physical realism/videocy variables explain the lack of significant chi-square relationships, as the following cross-tabulated table indicates:

Table 11

Medium Perceptions for Story and Play

		Story would look like:		
		Theatre (3)	Electronic Media (27)	Totals
Play looked like:				
Theatre	(19)	(3)	10	13
Electronic Media	(13)	(2)	17	19
Totals		(5*)	27	32

* Of these five children, two didn't know what the story would look like, but one thought the play looked like theatre, while the other thought it looked electronic. Of the three children who thought the story would look like theatre, one thought the play looked like theatre, while the other two thought it looked electronic.

Despite the lack of variability for the majority (81%) who reported watching both sets of dinosaurs, attention to the screen and the screen dinosaurs' physical appearances (as reflected by the number of times children mentioned each over interviews) also explain the lack of significant grade level differences and correlational results (respectively, $X = 2.09$, $SD = 1.15$; $X = 1.65$, $SD = 1.003$), as described by the following tables:

Table 12

	Frequencies for Screen Mentions				Screen Dinosaurs' Physical Appearances			
	1st	3rd	5th	Totals	1st	3rd	5th	Totals
none	1	2		3		1	4	5
1-2 times	6	6	5	17	8	9	5	22
3-5 times	3	3	6	12	2	1	3	6

Cross-tabulation:

	Screen Dinosaurs' Physical Appearances			
Screen	none	1-2 times	3-4 times	Total
none		2	1	3
1-2 times	2	12	3	17
3-5 times	2	8	2	12
Total	4	22	6	32

Conclusions

Contrary to hypotheses, the results of this study provide little evidence of a "videocy" dimension of perceived reality. In other words, it does not appear that children's consciousnesses were dominated or controlled by computer-animated dinosaurs--at least not four days after attending the performance. Several reasons may account for these results. First, there may have been too few subjects in each grade level (20 per grade is ideal) and an insufficient number of boys (11) in proportion to girls (21) to warrant significant age and sex differences. Second, first graders' memories were especially challenged by having to recall details from the play four days later. Therefore, results reflect fifth graders' cognitive development; that is, their greater mnemonic and strategic abilities which allow them to process visual and verbal cues in order to infer plays' main ideas better than first and third graders. Furthermore, the staging of the play's climatic ending confounded interpretations of the play's main idea and any potential relationships with videocy effects. Third, as children themselves noted, dinosaurs are expected to be represented as computerized images on film--because, after all, they *are* extinct--so the use of computer-animated dinosaurs in this live performance did not constitute a "spectacular" special effect to begin with. *If* videocy effects occured at all during the performance, children may have acclimated themselves to these computer-animations by the end of the performance. Thus, any delayed recall of the performance would not demonstrate videocy effects. Finally, videocy may simply be a non-viable dimension of perceived reality and/or potential videocy variables need to be redefined by measures other than those employed here.

Nevertheless, responses to the double set of dinosaurs in this production highlight the importance of physical realism to young spectators who assume, like Disney's *Dinosaur* computer-animators, that the goal of narrative entertainment is to create the most supra-realistic and life-like imagery possible with whatever new and innovative technologies lie at our disposal. For young media-savvy viewers, ‘real life’ is not defined by living human beings enacting events live before an audience in the same space and time. Contrary to beliefs that spectacular technical effects may divert attentions outside fictive worlds, young spectators take electronic media forms for granted by merging the emotional expressions of live and animated characters within textual content. Whether the particular children in this study will come to expect electronic imagery in future theatre productions at this same venue remains to be seen. However, spectators’ conditioning of perceived realities through electronic media suggests the ‘extinction’ of theatre’s live distinctions by way of the dinosaurs.

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DINOSAURUS INTERVIEW Child ID # ______

Child Name: ________________________ Interviewer Name: ____________________

Grade: 1st 3rd 5th Gender: M F Ethnicity: White Other

Introduction: (done on way to interview room)
"I'm glad that you could come to see the play *Dinosaurus* yesterday. When people see plays, they have lots of different ideas and feelings about the story and the way it was done.
May I ask you some questions about what *you* think and feel about this play with some pictures?"
[Child Assent] Yes No (thank child and escort back to classroom)

1. Do you think (1st, 3rd, or 5th) graders in another city would like this play ( ) a lot, ( ) a little, or ( ) not at all? [write in volunteered information]

2. Did you watch this play ( ) for fun or ( ) to learn something?
[write in volunteered information]

[IN INTERVIEW ROOM BY NOW]
"Is it OK with you if I turn on this tape recorder to help me remember what we say? [If yes, TURN ON TAPE RECORDER.] If you want to stop at any time during the interview, you can. It's OK. Your number is (state child ID # into recorder).

3a. Was this play ( ) easy or ( ) hard to understand? [BOTH:] Was it ( ) sort of easy or ( ) sort of hard? [OR] Was it:

( ) real easy ( ) real hard
( ) sort of easy? ( ) sort of hard?

3b. What made it (above answer) to understand?

Media Familiarity

4a. Have you ever seen a movie about dinosaurs?

Yes (Disney's *Dinosaurs*) (*Jurassic Park*) (*Land Before Time*) (other)

b. How was this movie different from the play you saw yesterday?

No

5a. Have you ever played a video or computer game about dinosaurs?

Yes

b. How was this game different from the play you saw yesterday?

No

6a. Have you ever seen a TV show about a dinosaur?

Yes (*Barney*) (other)

b. How was this TV show different from the play you saw yesterday?

No

7a. Have you ever seen a puppet show with dinosaur puppets?

Yes

b. How was this puppet show different from the play you saw yesterday?

No

Dinosaur Schemata

8. What are some things you know about dinosaurs? (prompt once) What else?

[CHECK WHAT CHILD SAYS BELOW:]

( ) are extinct ( ) not living anymore
( ) bones or fossils
( ) types/names of different dinosaurs
( ) different foot sizes
( ) 2 legs or 4 legs
( ) walk on ground or fly in air
( ) plant-eaters or meat-eaters
( ) teeth grind, tear, or pierce
( ) same or different from other animals
( ) WRITE IN OTHER

Factuality/Fictionality

9a. Could the *story* of the play you saw yesterday actually happen in real life today?

No b. Why not?

Yes b. Why?

Social Realism

10a. If this story *could* really happen in real life, would it look more like:

( ) a school play (theatre),
( ) a puppet show,
( ) a TV cartoon,
( ) a computer game, or
( ) a movie?

b. Why?

Physical Realism/Videocy

11a. Did the play you saw yesterday look more like: [MAY CHECK MORE THAN ONE]

( ) a school play (theatre),
( ) a puppet show,
( ) a TV cartoon,
( ) a computer game, or
( ) a movie?

b. Why?

Recall of Dialogue

12. "Why did the dinosaurs become extinct?"

Character Identification and Cued Story Recall

[SHOW SCREEN DINOS] Here's a picture of some of the dinosaurs that were on the screen in the play you saw yesterday. 13a. What did these dinosaurs *do* on the screen?

b. Were these dinosaurs
    ( ) actually real,
    ( ) realistic (or seemed like they were real); or,
    ( ) make-believe (or pretend)?
c. What made them (above answer)?

d. What feelings (or emotions) did these dinosaurs feel?

e. How do you know they felt these feelings (emotions)?

[SHOW DINO CHORUS]
14a. These people played different parts in the play. They played dinosaurs and what else?
[prompt once] What other parts did they play?

b. How do you know when they switched (or changed) parts?
[prompt] How do you know when they were playing a certain part?

c. Were these people
    ( ) actually real,
    ( ) realistic (or seemed like they were real); or,
    ( ) make-believe (or pretend)?
d. What made them (above answer)?

e. What feelings (or emotions) did these people feel?

f. How do you know they felt these feelings (emotions)?

[SHOW BOTH DINOS AND CHORUS]
15a. During the play, did you watch (   ) the dinosaurs on the screen
or did you watch (   ) these people? (both)

b. What made these dinosaurs (more) interesting to watch?

c. What made these people (more) interesting to watch?

16a. Why do you think they put the dinosaurs on the screen ***and*** these people on stage?

b. What difference did it make?

[SHOW BUNK] Here's a picture of the oil worker in the play.
17a. Was he
- (   ) actually real,
- (   ) realistic (or seemed like he was real); or,
- (   ) make-believe (or pretend)?

b. What made him (above answer)?

c. What did he do at the end of the play? [prompt] What did he decide to do at the end of the play?

d. How do you know he did (or decided to do) that?

e. What did he learn from the play?

f. How do you know he learned that?

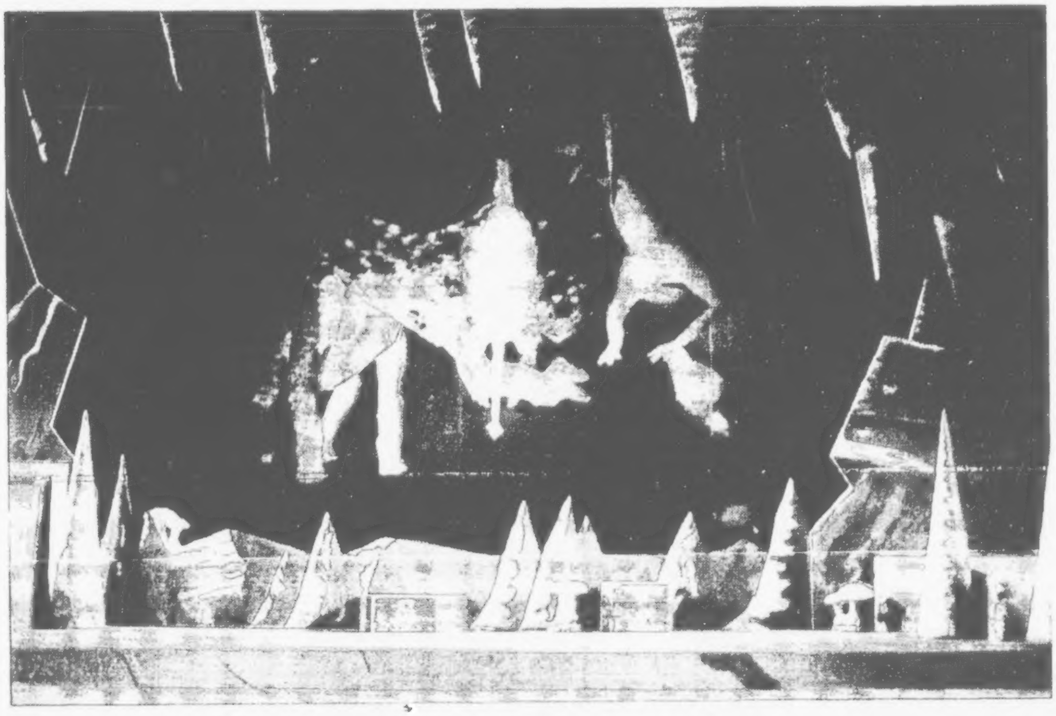
"That's all the questions I have for you. Do you have any questions you'd like to ask me?"

[Ask child to answer own question:] "I'm not sure. What do you think?"

[TURN OFF TAPE RECORDER. IF DONE WITH 2 INTERVIEWS, TURN TAPE OVER AND REWIND. IF DONE WITH 4 INTERVIEWS, INSERT NEW TAPE.]

"Okay, we're done. Let's go back to your classroom now. Thank you so much for your ideas and feelings about the play. You really know a lot about this play, and your ideas and feelings about it have really helped me lot."

"Here's a picture of some of the dinosaurs that were on the screen in the play you saw. What did these dinosaurs *do* on the screen? . . ."



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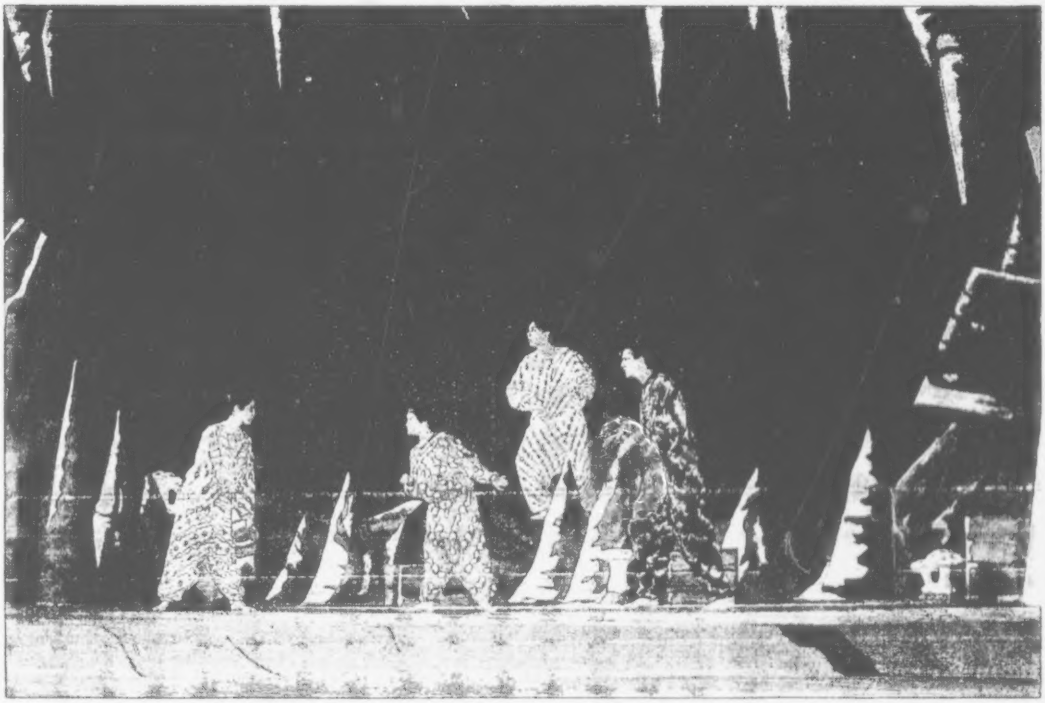
"These people played different parts in the play. They played dinosaurs and what else? . . ."



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"Here's a picture of the oil worker in the play. . . ."

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CODING METHOD

When reading transcripts:
[ ] means interviewer's probing
{ } means child's non-verbal responses or interviewer's written way of wording
( ) means transcriber's clarifications or comments

Child ID #
Grade
Gender
1. Enjoy 3-a lot 2-a little 1-not at all
2. Motive 3-Learn 2-Both 1-Fun

3a. Difficulty 1-real easy 2-sort of easy 3-sort of hard 4-real hard

3b. Attribution (What made play X to understand?) Code all categories that apply
SCR-Screen (i.e., focused on screen to show info; dino types)
AC-Acting (e.g., includes Chorus' visual movement and verbal telling)
TA-Aural/verbal clarity (e.g., talking/telling only w/no ref to visual; speed, volume, vocabulary)
IF-Inside Fiction (refers to script/setting premise; info about dinos)
VC-Viewing Context (e.g., audience inaction or emotional response)
0 - Don't know or no reasons given.

4-7a. Movie; Game; TV; Puppets 0-No 1-Yes
4-7b. How Different Code all that apply
Content (refers to subject matter)
CS-different Story/plot events
CC-different, more/fewer Characters

Form (refers to medium and physical/sensory appearances)
FC-different Character appearances (e.g., costumes, colors, reality, materials, talking)
FS-different Scenery
FM-different Medium (i.e., interaction, context, purpose/genre; live people acting vs. animation)

0-Didn't see medium; don't know or gave no reason; same/not different

8. DinoKnowledge

KC-K-Curriculum: Code all categories that apply

- EX-Extinct (dead; not living anymore)
- PA-Physical Attributes (i.e., Size (big, tall, small); Types; people study Bones/fossils)
- AA-Activity Attributes (i.e., Eat meat/plants; Lay eggs)

ME-Media Experience: Code all remaining (not included above) here; see Media answers above
(e.g., good to see; longnecks; growl/stomp/fight; environment; reptiles; colors; mean/nice; DNA; birds w/scales; carnivores)

12. Dialogue Recall

2- Correct:

- AST-Asteroid, meteor; volcanoes
- EN-Environmental change: sun gone; weather change; too hot/cold; plants died; no food/drink; sunk in mud
- SDK-Scientists Don't Know

1-Incorrect: HG-Humans caused death; Gave up (reason given in play)

0-Child doesn't know

9a. Fiction 1-No 0-Yes or maybe

9b. Why/Not

FEX-Extinct (dead; lived long time ago)

FO-Other reasons (past time; no food/space; don't talk; no proof of extinction)

10-11a. Realism & Spectacle Code all that apply

TH-school play M-movie TV-TV cartoon/show CG-computer game P-puppet show

10-11b. Why Code all categories that apply

PA-Physical Appearances (e.g, size; visual movement; color; volume; scenery/costumes)

AC-Acting (e.g., live people playing)

SCR-Screen (with computerized graphics/pictures)

PR-degree of Perceived Reality (i.e., look/sound real)

VC-Viewing Context (e.g., audience; purpose; genre)

13a. Screen Dino Do - Code all categories that apply
Physical Production:
- MV-Movement (e.g., moved, walked, flew; physical appearances)
- MM-Mimicked chorus
- TAN-didn't Talk Aurally
- TAY-did Talk Aurally (include sound effects) [indicates blurring w/fictive world?]

Fictive Script Content:
- SC-Script actions (e.g. fought; tried to scare away humans; played dead; etc.)

14a. Chorus Parts - Code both that apply
O-Objects (i.e., mushroom, egg, rock, plants)
N-Narrators (i.e., people/humans talking)
0-other dinosaurs or don't remember [CODE 0 only if no other parts above are mentioned]

14b. HK Chorus Change - Code both that apply
AC-Acting (movement; talking; includes costumes)
SCR-Screen/picture changed

Perceived Reality 13b. SPR (ScreenPR) 14c. CPR (ChorusPR) 17a. BPR (BunkPR)
AR-Actually Real R-Realistic MB-Make-Believe

13c, 14d, 17b. What Made PR Code all categories that apply
Medium:
MT-Technology (on TV/computer screen w/machine)
MH-Human (abilities, traits; move, walk, talk, etc.)

Theatre Knowledge: (refers to theatre conventions known from *inside* production)
TK-(e.g., actor pretending/playing part/not oil worker; matching movements; wore costumes)

Social Un/Realism: (refers to fictional conventions compared *outside* production; traits of screen graphics; actor's believability compared against social knowledge)
SR-(e.g., dinos don't talk/colors; happened long ago; actor acting like characters)

Emotions & HDYK 13d&e. SCR (Screen) 14e&f. CE (Chorus)
IF-Inside Fiction and/or acting cues (i.e., any emotions attributed to story situations/conflicts against Peek/Bunk and/or *character* behaviors)
IP-Inside Production (i.e., *actors'* emotions)
OF-Outside Fiction (e.g., media schema/dino knowledge)

15a. Watch SD-Screen Dinos CD-Chorus Dinos B-Both
15b. SD Interest & 15c. CD Interest
PA-Physical Appearances (see better; *different*/movements; colors; costumes; can fly; size; 3-D)
MM-Mimic (*same* movements; matching colors; people acting out dinos)
TA-Talking (people voiced dinos; dino sound effects)
PR-Perceived Reality (dinos more real than people; real people)
EM-Emotional quality (funny; acted silly)

16a. ArtMotive & 16b. AMDiff [Code together as one variable with overlapping categories]
T-Types (to differentiate type of dino; know which person playing which; no costume change)
PR-Perceived Reality (real/bigger dinos; people can't fly/don't look like dinos; weird costumes)
  TA-Talk (so people can voice dinos; screen/dinos can't talk)
AC-Acting (i.e., so people can act out dinos; wouldn't be theatre w/out people; movie only)
MM-Mimicking (i.e., discusses how people control/copy screen dinos)
VC-Viewing Context (e.g., see better; easier to pay attention/understand; choice in watching; emotional qualities)
0-Don't know

17c. Bunk DoEnd & 17e. Bunk Learn
[Code together as one variable from answers to all 4 questions (17c-f) by selecting highest #]
4-Consequence of actions=
  So that nobody/partner would go back in cave; to protect dinos from human exploration; to save dinos' lives (from extinction); therefore, dinos are still alive/not extinct
3-Decision=Leave dinos alone; don't bother/hurt/kill dinos; don't take to zoos; stay off property;
2-Bunk stayed with dinos (epilogue)
1-About Dinosaurs (contrary to media depictions?)
  (e.g., they're nice; not mean or scary; won't harm/eat you)
0-Don't know or can't remember

17d&f. HDYK
[Code together as one variable from answers to all 4 questions (17c-f) by selecting all that apply]
Actions=

Visual:	V4-Blew up cave entrance, so nobody can find way back in
	V3-Destroyed film; threw down camera
	V2-Stayed w/dinos (epilogue: came back in cave, but didn't tell Peek)
Aural:	A2-Narrator told
	A1-Bunk said (e.g, "Don't tell other scientists/Peek")
Aural/Visual:	AV2-Bunk's Arc (i.e., 1st scared, then not scared)
	AV1-dino Saved him

0-Don't know or can't remember

Coding Reliability

3b. Attributions	98%	
4-7b. Media Differences	99%	
8. Dinosaur Knowledge	100%	
12. Dialogue Recall	100%	
9b. Factuality	99%	
10b. Why Story Medium	96%	
11b. Why Play Medium	97%	
13a. Screen Dinos Do	100%	
14a. Chorus Parts	97%	
14b. How Know Change Parts	99%	
13b, 14c, 17a. Perceived Realities	100%	
13c. Why Screen Dinos PR	100%	
14d. Why Chorus Dinos PR	99%	
17b. Why Bunk PR	100%	
13d&e. Screen Dinos' Emotions	98%	
14e&f. Chorus Dinos' Emotions	97%	
15a. Watched Screen/Chorus	100%	
15b&c. Screen & Chorus Interest	100%	
16a&b. Artistic Intentions/Diff	96%	
17c&e. Bunk Do/Learn	99%	[1st time]
17d&f. How Know Bunk Do/Learn	98%	[1st time]

MATRIX OF VARIABLES

Variable	INSIDE PRODUCTION Visual	INSIDE PRODUCTION Medium	Aural	INSIDE FICTION	OUTSIDE: PERC REAL	DINOKNOW	MEDIAKNOW
3b.Attributions	AC/MM	SCR	TA	IF			VC
16ab.ArtMotiveDiff	T AC/MM				PR		VC
10b.WhyStory	PA AC	SCR			PR		VC
11b.WhyPlay	PA AC	SCR			PR		VC
13a.SDinoDo	MV MM		TAN/Y	SC			
15b.SDInterest	PA MM		TA	(EM)	PR		
13c.SDPR		MT			SR		
13d.SDEM				IF		OF	
14a.ChorParts	O		N				
14b.ChorChange	AC	SCR					
14d.CDPR	AC/TK	(MH)					
14e.CDEM	IP			IF		OF	
15c.CDInterest	PA MM		TA	(EM)			
17ab.BunkPR	AC	(MH)			SR		
17c-f.BunkActions	V2-4		A1-2				
17c-f.MainIdea				4-1			
4-7.Total ME							0-4
4-7.MediaDiff							Cont Form
[Cut 9a.Fiction						FEX FO]	
8.DinoKnow						EX PA AA ASTR ENV	ME
12.DialRecall				HG			

VARIABLES (entered into SPSS)

ID# Age (in months)
Grade 1 3 5
Sex 1-male 2-female
Race 1-white 2-color

1. Enjoy 3-a lot 2-a little 1-not at all
2. Motive 3-Learn 2-Both 1-Fun
3a. Difficulty 1-real easy 2-sort of easy 3-sort of hard 4-real hard

4-6a. Electronic Dino Media Experience (excluding Puppets) (range 0-3)
4-6b. # of Content Differences from play (range 0-3)
4-6b. # of Form Differences from play (range 0-4)

8. # of Dino Knowledge (EXT+PA+AA) (range 0-3)
8. Knew dinos Extinct (EXT only) 1-yes 0-not mentioned
8. Knew dinos from Media (ME only) 0-not stated 1-possibly from media 2-definitely from media

10a. Story would look like play 2-yes 1-no, story would look electronic
    then recoded: Play 1-yes 0-no
        Electronic 1-yes 0-no
11a. Play looked like theatre/puppets 2-yes 1-no, play looked electronic
    then recoded: Theatre 1-yes 0-no
        Electronic 1-yes 0-no
as well as:
THEATRE 0-story &/or play looked electronic (movie+TV+computer game)(=10&11a)
    1-story would like TH (=10a)
    2-play looked like TH (=11a)
    3-artistic reason for Screen & Chorus Dinos (=from 16AC)

12. Reasons for Extinction (Dialogue Recall) 2-Correct 1-Incorrect/Humans 0-Don't Know
13a. Screen DinoTalk? 0-not mentioned 1-can't talk 2-can talk

13b.14c.17a. Characters' Perceived Reality (each of 9) 1-yes 0-no
    Make-Believe, Realistic, Actually Real

15a. Watched 1-Screen Dinos 2-Chorus Dinos 3-Both
16ab. Artistic Reason=Types of dinos 1-yes 0-not mentioned

13de. Screen Dino Emotions 0-don't know 1-outside fiction 2-inside fiction
14ef. Chorus Dino Emotions 0-don't know 1-outside fiction 2-inside production 3-inside fiction
as well as 5 discrete variables: 1-yes 0-no

17c-f. Bunk's Actions:

Blew up cave entrance	1-yes	0-not mentioned
Took away/destroyed camera	1-yes	0-not mentioned
Bunk stayed w/dinos	1-yes	0-not mentioned
Narrator told avalanche	1-yes	0-not mentioned
Bunk told secret	1-yes	0-not mentioned
Bunk's arc	1-yes	0-not mentioned
Dino saved Bunk	1-yes	0-not mentioned

17c-f. Consequential Main Idea

4-so that no one returns to cave (e.g., to save dinos' lives)
3-leave dinos alone
2-Bunk stays with dinos
1-Dinos are nice, not scary
0-don't know or can't remember

COMBINED VARIABLES (# = frequency of mentions over whole interview):

SCReen	[3bAttr+10bStory+11bPlay+13cSD(MT)+14bChorChange]	(range 0-5)
TAlk	[15bSD+15cCD+14aNarrators+16TA]	(range 0-3)
ACting	[16AC+14bChorusAC+14dAC]	(range 0-3)
Perceived Reality	[16PR+10bEL(PR)+11bEL(PR)+13c(SR)+15bSD(PR)]	(range 0-4)
ScreenDPhysical Appear	[10bEL(PA)+11bEL(PA)+15bSD(PA)+13aSD(MV)]	(range 0-4)
ChorDPhysical Appear	[11bTH(PA)+15cCD(PA)+14bCD(clothing)+14aCD(O)]	(range 0-3)
Viewing Context	[10bEL(VC)+11bEL(VC)+3bAttr(VC)+11aTH(VC)+16(VC)]	(range 0-2)
MiMicry	[15bSD(MM)+15cCD(MM)+16(MM)+3bAttr(AC)]	
	0-not mentioned 1-15bSD(MM) 2-15cCD(MM) 3-Both	
InsideFiction	[13aSDdoSC]	
Make-Believe	[13bSDPR+14cCDPR]	
Realistic	[13bSDPR+14cCDPR]	
Actually Real	[13bSDPR+14cCDPR]	

AGGREGATED VARIABLES

Inside Production Cues:
Visual = [S/CD PhysAppear + Types + BunkV2-4]
Verbal = [Talk +SDTalk + BunkA1-2]
Visual/Verbal = Acting + Mimicry + Bunk AV1-2

Inside Fiction = [SDdoSC + SDEmIF + CDEmIF]
Main Idea

Outside Production Cues:
Perceived Reality Cues
Dinosaur Knowledge = [# of + Extinct Reasons + SDEMOF + CDEMOF]
Media Knowledge = [ElectExperience + #Content + #Form + ViewingContext + CDEmIP]

Perceived Reality Labels:
Make-Believe
Realistic
Actually Real

Videocy:
Screen
Watched

Play looked Electronic (13 children)
Story would look Electronic (27 children)

Story would look like Theatre (3 children)
Play looked Theatre (19 children)
Artistic Reason for S/CD is Theatre (3 children)

Teachers' Evaluations of
DINOSAURUS
KU Theatre for Young People
February 5-9, 2001 - grades 1-3

21 Lawrence and 6 rural teachers responded (14% return rate).

Main ideas understood from play (mean rating 5.7 out of 7):
    Dinosaurs are extinct (e.g., caused by humans intruding on environment);
    Face your fears and be kind to dinosaurs.
Confusing theatre conventions:
    Two sets of dinosaurs (i.e., actors and computer animations on screen);
    Doubled dinosaur roles and narrators in "pajama" costumes;
    Mixed opinions about script and dialogue.

High Attentiveness (mean rating 6.2 out of 7) to:
    Computer animations; various, physically humorous moments.
Lower Attentiveness to: Extended conversational scenes between scientists and dinosaurs.

Meaningful play choice and ranking with past TYP productions (mean rating 6 out of 7).

Teacher Preparation: Most told or read the story/synopsis to students.

Teacher's Guide: Synopsis was most useful, as well as computerized explanations and curricular/sensory things to look for.

Most teachers praised this production with few problems noted.

The University of Kansas

Theatre for Young People

Please put in teachers' mailboxes by January 19

TEACHER'S GUIDE
written by Jeanne Klein with Patrick Carriere

The University of Kansas Theatre for Young People presents

DINOSAURUS

by Edward Mast and Lenore Bensinger

Crafton-Preyer Theatre, Murphy Hall

Monday-Friday, February 5-9, 2001	1:00 p.m.	Lawrence Public Schools
Wednesday, February 7, 2001	1:00 p.m.	County schools

Tickets for all school matinees are $2.50
(Complimentary tickets for teachers and students on free or reduced lunch programs)

Saturday, February 10, 2001	7:00 p.m.	Public Performance

Tickets are $3 for K-12 students, $6 for adults, and $5 for senior citizens
Call Murphy Hall Box Office 864-3982, 11 a.m. to 6 p.m. Monday through Friday
Most appreciated by families and children ages 5 and up.

Children with hearing difficulties may use special hearing devices in the Crafton-Preyer auditiorium (provided by Friends of the Theatre). Teachers should make special arrangements in advance with either Gwethalyn Williams (864-5576) or Murphy Hall Box Office (864-3982).

PREVIEW FOR TEACHERS AND PARENTS

Parents, teachers of grades 1, 2, and 3, and other school staff members are invited to attend the final run-through rehearsal of *Dinosaurus* on **Monday, January 29 at from 7:00 to 8:00 p.m. in the Crafton-Preyer theatre of Murphy Hall**. The purpose of this preview is to acquaint you with the final stages of rehearsal before remaining technical requirements are completed, so you may prepare students in advance of their attendance the following week. The rehearsal is scheduled to begin at 7:00 p.m. and to run non-stop until approximately 8:00 p.m. Please feel free to ask questions about the production or other issues about theatre education.

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SYNOPSIS OF THE PLAY - MAN VS. NATURE

The play begins as Peek and Bunk, two people who work for an oil company, uncover the entrance to a hidden cave. This special cave is the private home of a group of dinosaurs who have lived there thousands of years underneath the ground. As the humans explore the cave, they slowly discover the dinosaurs. Peek, the smart scientist, is excited by this discovery. She wants to become rich and famous from it because everyone knows that dinosaurs are supposed to be extinct. Bunk, an average person, is at first very frightened by the dinosaurs. The dinosaurs are also afraid of Peek and Bunk because they don't even know what humans are, so they call them "no-necks." The dinosaurs think that the "no-necks" smell funny, make the water taste bad, and make scary flashes of light (from Peek's camera). The "no-necks" are ruining their home and the dinosaurs can't do anything about it. Peek doesn't realize how she is hurting the dinosaurs because she sees them only as scientific objects to study. But Bunk can tell that the dinosaurs have feelings like humans, and he can see what he and Peek are doing to their community. In the end, Bunk has to decide if he should follow his feelings and protect the dinosaurs, or if he should listen to Peek's reasons for taking advantage of this important scientific discovery.

What would you do if you were in Bunk's situation?

COMPUTERIZED ANIMATIONS - MAN AND TECHNOLOGY

This production will employ computerized animations of all the dinosaurs projected onto a large screen behind the live actors. These computerized images, designed by faculty scenographer Mark Reaney, are part of his ongoing experimentations with "virtual reality." The primary goal of "i.e. VR" is to explore new, real-time computer graphics technologies in live performance. This production, like others before it, is a showcase and testing ground for new techniques. According to Reaney, "Theatre doesn't have to be anti-video or anti-cinematic but can embrace those elements just as it has embraced all new technologies throughout its history. In doing so, we have adapted them to our own goals of creating exciting live performances for modern audiences."

During performances of this play, backstage crew members will manipulate joysticks on computers to control the movements of dinosaurs projected onto a special screen. At the same time, a dinosaur "chorus" of live actors will provide the voices of each dinosaur while dramatizing their interactions on 3-dimensional scenery in front of the screen. While these theatricalized conventions may appear to "double" the dinosaur characters, "putting people in front of the screen foregrounds the differences between virtual reality and live reality," according to graduate student and director, Patrick Carriere. "The screen only shows images and sounds we can't understand until the chorus-actors communicate on a human level. The exciting thing is how we can humanize virtual reality when live actors communicate on stage." The use of computer graphics in this production adds another dimension to the theme of this play for children who are used to seeing animated dinosaurs in movies and video games.

SCIENCE CURRICULUM TIE-INS

DINOSAURS **(Vocabulary words in the play)**

* Review and extend the Kindergarten curriculum by identifying the following **species** or kinds of dinosaurs that are depicted in the play:

Dinosaur Name	Character Name in Play
Tyrannosaurus Rex	KingKing
Pterodactyl	Point
Triceratops	Spike
Brontosaurus	Big and Tall
Hadrosaur	Hark and Zoozoo
Anklysosaurus	Turtle
Gorgosaurus	MeatMouth
Fabrosaurus	Baby

* Explain that dinosaurs are **extinct** or not living anymore, in part, because **mammals** (or what the dinosaurs in the play call **"furries"**) arrived. These **prehistoric reptiles** lived over 65 million years ago during the **Mesozoic Age**.

* Dinosaurs are classified by their physical properties. Some flew in the air and others walked on the ground on **two legs (bipedal)** or **four legs (quadripedal)**, leaving huge **footprints** found in **fossils** today. Some were **meat-eaters** and some were **plant-eaters**. Some had **long necks** and some had **short necks**, which is why the dinosaurs in the play call the humans **"no necks."** The biggest dinosaurs were long-necked, plant-eating **sauropods** that walked on four legs. After a **mating dance**, dinosaurs gave birth to babies by laying **eggs** in nesting colonies.

KU NATURAL HISTORY MUSEUM

We Love Dinosaurs! (for ages 4-5)
Sunday, February 11, 1:00-2:30p.m. and 3:00-4:30p.m.

In addition to this special workshop, the museum offers many other educational resources to area schools. You can also rent a Dinosaur or Kansas Geology trunk to use in your school. Learn what each trunk contains at <www.nhm.ukans.edu/pubed/teacherpage> or call 864-4173 for more information.

OIL from EARTH MATERIALS

* When the dinosaurs died, their remains were covered and buried by layers of mud, water, and dead plants. Over millions of years, heat and pressure from these layers helped the remains form into crude **oil** or petroleum, which means "rock oil" or "oil from the earth." Crude oil is a smelly, yellow-to-black liquid that is usually found underground.

* Scientists (like Peek) and engineers (like Bunk) explore underground caves to get **shale samples** (pieces of rock) from the earth, so they can **analyze** and study these rock samples under a microscope to see if they contain any **oil** trapped inside. If the rocks contain enough oil, then engineers build derricks to drill the oil out of the ground.

* After crude oil is removed from the ground, it is sent by pipeline or ships to refineries. At the refinery, different parts of the crude oil are separated into useable petroleum products. For example, a 42-gallon barrel of crude oil makes 19.4 gallons of gasoline. Oil supplies 40% of U.S. energy consumption. About half the oil consumed in the U.S. is produced here and the rest is bought from other countries.

WHAT DO WE USE OIL FOR?

* Name things that are made from these petroleum products and what we use them for:

gasoline	to run cars and lawn mowers
diesel or *jet fuel*	to run trucks and airplanes
heating oil	to heat homes, schools, and businesses
asphalt	to build streets and highways and to patch potholes

* Name things in your classroom that are made from these petroleum products:

linoleum	floors
nylon and *polyester fabric*	clothes, pillows, sleeping bags
hard plastics	eyeglasses, pens, toothbrushes, bike helmets, toys
rubbery plastics	tires, balloons, band-aids, soccer balls, tennis shoes
and also	crayons, ink, Vaseline, and bubble gum!

* Then discuss why Bunk wants to find oil in the cave.

THINGS TO LOOK FOR AND SENSE DURING THE PLAY

Use your five senses and your imagination to think like a scientist and a theatre artist

TOUCHING SOLIDS & LIQUIDS

* What solid objects do Peek and Bunk find in the cave? What liquids do they find? How do they know the difference between solids and liquids?

* What are the dinosaur images on the screen made of? How do you know?

* If you touched the dinosaur images, what would you feel? If you touched the scenery, what would you feel? If you touched the actors, what would you feel?

SEEING ACTUAL & VIRTUAL REALITIES

* What things on stage are biologically alive and living? What things on stage are "virtual" or not biologically alive and living? How do you know the difference?

* What things on stage are actually real but created from people's imaginations? How do you know? What things are imagined, pretend, or make-believe? How do you know?

* So how do you know what's "real" and what's "fake" on stage?

HEARING SOUNDS

* Listen to the sounds that the dinosaurs make in the play. How are these sounds made? How does each dinosaur sound different from the other dinosaurs? What makes them sound different from one another?

* Make your own voice sound like different dinosaurs. How do you change your voice to make it sound different? Why do people's voices sound differently from one another?

SMELLING AIR

* What do the dinosaurs smell when Peek and Bunk enter the cave? What do Peek and Bunk smell in the cave? How do they know?

* Imagine what the air smells like inside a cave filled with dinosaurs. How do your imagined smells of the air differ from what the air actually smells like in the auditorium?

DINOSAURUS DRAMA WORKSHOPS

Some of the actors from *Dinosaurus* and TYP Director, Jeanne Klein, are available to visit your classroom for a free, one hour (or less) drama workshop after the performance run. This workshop is intended to extend the play's themes, to involve students in role-playing situations, and to answer their questions about theatre and this production. Contact Gwethalyn Williams or Jeanne Klein (864-5576) to arrange a time for a classroom visit.

DRAW A PICTURE THAT SHOWS A VERY IMPORTANT SCENE THAT HAPPENED IN THE PLAY

Send drawings to Jeanne Klein, Theatre for Young People, 317 Murphy, KU, Lawrence, KS 66045.

Behavioral Responses of Participating Children during Performance

Thursday, February 8, 2002

The performance began at 1:05 p.m. during a cold winter rain. Participating children sat in the first ten rows of the center front orchestra by grade level (1st, 2nd, 3rd, and 5th). The rest of the orchestra and mezzazine was filled with primary grade students and teachers from four other Lawrence elementary schools totalling approximately 650 audience members. During the performance, the principal investigator took running notes of aural responses based on observations from her aisle orchestra seat in the following sequence of events (numbers refer to pages in the script).

For the most part, audiences were quiet during the opening moments of the play, even during the first appearance of the computer-animated dinosaurs on the screen. When Peek pointed out a dinosaur "footprint" (3), third and fifth graders from the participating school raised their heads up in an attempt to "see" the (imaginary) footprint on the stage floor. Giggles or laughter first occurred when Hark played dead, so KingKing wouldn't eat her, and he said, "Playing dead! Hey! That's no fair!" (5); and, when a furry ball rolled across the stage, frightening Bunk who reacted, "What was that?!" (7). When KingKing said, "Whaddya think, I'm stupid?" (9), other school students replied, "Yeah" out loud. When Peek flashed a picture of KingKing, her camera flashes stopped working after the first flash. Some children reacted noisely to this prop failure, and so didn't hear KingKing refer to the flash as "Fire" (11).

When Bunk began collecting rock samples alone on stage as three curious dinosaurs loomed behind him (12-13), one participating first grader said quietly, "Oh, oh. Look back," as if to warn him. Loud laughter erupted when Bunk screamed upon seeing the dinosaurs and ran away offstage. In the next scene, when the "virtual" dinosaur named Big arose from sleeping (14), several students from other schools said, "Cool!" After Zoozoo stopped Bunk from stepping in "quicksand" to "save his life" (16), one fifth grade boy from the participating school stood up in his seat to "see" the imaginary quicksand on the floor. In the next episode, as the dinosaurs reflected on their "memory of sunlight, dancing in the warm light" (17), the changing yellow lights glowing from the cave entrance elicited "Cool!" responses. Participating first graders giggled when Bunk sat on the back of a chorus member playing a mushroom (18).

Some children became restless as Peek explained some dinosaur facts to Bunk (20-21). Once again, a few participating children stood up to see what Peek "found" on the downstage pit floor. But they quieted when Bunk grabbed Peek's camera away from her--"You scared the daylights out of them" (22). Participating first graders giggled when Peek tried to retrieve her camera from Bunk, and then laughed when Bunk held her back with his outstretched arm and hand against her head. Audiences reacted in awe ("Ahh, cool") when a "virtual" grey dinosaur entered on the screen, becoming KingKing's dinner, and then quieted as this Narrator explained dinosaurs' eggs (24). After the egg hatched, they laughed loudly when the Baby (a 6'5" actor) pushed Bunk down to the ground (26).

For the remainder of the play, participating students were attentive and quiet for the most part, growing more quiet and still as the dinosaurs "died" (i.e., playing dead). Everyone applauded as the play ended at 1:44 p.m.

Children's Drawings of *Dinosaurus* Performances

The Teacher's Guide, mailed to all attending schools, encouraged primary grade students to "Draw a picture that shows a very important scene that happened in the play." Drawings by first and second graders were received from five Lawrence schools (Deerfield, Hillcrest, New York, Pinckney, and Sunflower) and three rural schools (Marion Springs, Tonganoxie, and Valley Falls) (N = 147). The principal investigator explored common images among drawings to see which visual elements and identifiable scenes from the production appeared to be most salient. Children's perceptions of their own drawing abilities must also be taken into account with these informal and unsystematic findings.

Common themes varied by each school classroom, probably based on teacher's discussions of the play with students. While Bunk and/or Peek were included in many drawings, over half of all children focused on drawing their own images of various types of one or more dinosaurs. Although some may have attempted to capture the literal imagery of the computerized dinosaurs, these images were not clearly identifiable. However, some dinosaurs were drawn inside a rectangle or "screen," sometimes filled in with black or navy crayons. Very few pictures contained images of the dinosaur actors wearing dotted clothes, and only two of these indicated mimicry with a dinosaur depicted on a screen. The cave scenery was included in most pictures, usually drawn as triangles or cones above and/or below scenes, together with the cave entrance, its hole and/or downward "steps" situated stage right. The cracking egg was also a common image, given that its hatching into a baby dinosaur was a favorite scene among many, especially when Baby pushed Bunk down. A few children added water drips from upper cones, footprints on the ground, or the sun with or without trees, imagined from given dialogue and sound effects.

Table 13

Depicted Images of Children's Drawings (N = 147)

Dinosaur Imagery		
child's own dinosaur	82	(56%)
dinosaur drawn inside screen	22	(15%)
dinosaur actor in dotted clothing	11	(7%)
no dinos/Bunk and/or Peek only	7	
Includes Scenic Elements:		
jagged/toothed cave top & bottom	52	
cave cones	32	
cave entrance (left side=stage right)	33	
cracking egg	21	
mushroom/s	10	
"Dinosaurus" title (screen projection)	14	
auditorium/audience/lighting instruments	3	
Added/Imagined from dialogue/sounds		
water drips	9	
sun	7	
trees	6	
footprints	3	
Identifiable Scenes		
Egg hatches	17	
Baby dino pushes Bunk down	10	
Bunk gets frightened by dinos	7	
Hungry T-Rex never got to eat	7	
Peek/Bunk find T-Rex	4	
Peeks takes pictures/Bunk stops/rips camera	6	
Dinos play dead/die	3	
Dave's narration about dinos	1	
P/B enter cave/find footprints	1	
Quicksand	1	
Happy dinos when people leave	1	
Uncodable	10	

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